

EGGS WEIGHT INFLUENCE ON THE INCUBATION OF LIGHT HEN BREEDS EGGS

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Abstract. The experiment amterial was represented by a lot of reproduction hens, Rosso SL 2000 parents for egg consumption. During the period of the flat level of egg laying curbe (35 – 49 weeks) from these hens weekly were harvested eggs which were after that grouped related to their weight in the small (50 – 57 g), medium (58 – 62 g) and big (63 – 68 g) eggs categories and then were incubated. Incubation indexes followed were the fecundity, dead embryos and hatching percent. The highest level of fecundity was realised earlier in the big eggs category and then decrease gradual. Dead embryos percent has higher values during the first week of incubation. In the next two weeks decreases, but as a fact of a bad incubation regime. For the big and small eggs the dead embryos percent is higher.

INTRODUCTION

The eggs weight and number (production) are some of the main objectives followed in the used lines selection for the consumption eggs. Alongside the specific consumption determine an important part of the economic of this poultry domain.

The continue improvement of eggs weight influences the egg quality and determines the physical factors level which occur during incubation process. On the other hand the eggs weight improves with the hens' age influencing the first day obtained chicken number and quality. The same problems were studied by Suarez et al. (1996) in hens and K. E. Nestor (1997) in turkey hens.

Starting from these considerates it is adequate to continue the researches concerning the correlation between eggs' weight – incubation indexes – first day chicken quality and data actualization varying with the hybrids genetic structure alteration.

MATERIAL AND METHOD

The biological material was represented by the reproduction hens, parents of the Rosso SL 2000 hybrid with the age of 35 and 49 weeks old. From this poultry group, weekly, in the mentioned period, were harvested and weight eggs grouped after weight: small eggs category with a weight of 50 – 57 g, medium eggs with 58 – 62 g and big eggs of 63 – 68 g. Weekly, on the control sieve, were introduced into the incubator and were

followed the fecundity percent level, the percent of the death embryos and hatching. There was also determined the chickens weight and their viability.

On the basis of the weekly values was calculated an average for the control period of every eggs categories. Afterwards the data obtained were organized in a table which allowed also following the dynamics of the incubation related to the age of the hens.

RESULTS AND DISCUSSIONS

The weekly dynamics analyze of the incubation indices from the experimental period, regardless the eggs weight category, it doesn't have a distinguished feature but just small positive or negative weekly variations. The data dissemination and grouping on 3 short periods of 5 weeks, give us the possibility to reach some observations of interest which preponderant display the influence of the hens' age for every eggs weight categories

Table 1
Incubation indexes dynamics

Hens age weeks	Eggs weight category								
	Small			Medium			Big		
	Incubation indexes %								
	Fecun- dity	Dead embryos	Hatching	Fecun- dity	Dead embryos	Hatching	Fecun- dity	Dead embryos	Hatching
35	91.67	10.00	81.67	98.00	4.00	94.00	97.91	4.66	93.35
36	98.67	8.33	90.34	97.44	4.66	93.33	96.58	9.33	87.25
37	98.34	10.00	88.34	92.67	8.00	84.67	94.86	4.85	90.01
38	93.34	6.32	87.07	90.00	6.00	84.00	97.23	5.54	91.69
39	95.00	8.33	86.64	92.00	6.67	85.34	97.34	6.67	90.67
40	98.34	5.00	93.34	94.00	7.33	86.64	96.53	8.00	88.53
41	95.24	4.70	90.54	96.00	6.67	89.33	97.52	9.02	88.50
42	98.34	8.33	90.01	96.67	4.66	92.01	97.34	10.00	86.60
43	95.24	6.45	88.79	96.00	6.00	90.00	95.84	8.32	87.52
44	96.67	6.67	90.00	94.67	7.32	87.35	95.14	6.24	88.90
45	95.00	8.33	86.67	94.45	5.55	88.90	94.93	7.96	86.97
46	95.00	6.67	88.33	95.34	8.66	86.68	96.67	8.00	88.67
47	96.67	8.33	88.34	94.67	6.67	88.00	95.34	8.67	86.67
48	95.00	10.00	85.00	96.00	10.00	86.00	96.67	10.66	86.00
49	96.67	10.00	86.66	94.00	8.00	86.00	92.63	10.66	81.97
35-39	95.40	8.59	86.81	94.02	5.86	88.16	96.78	6.21	90.57
30-44	96.76	6.23	90.53	95.46	6.39	89.07	96.47	8.31	88.16
45-49	95.66	8.66	87.00	94.89	7.77	87.12	95.24	9.19	86.05

The highest level of fecundity is reached when the hens are 40 – 44 weeks old in the case of small and medium eggs and decrease gradually in the case of the big eggs.

Dead embryos percent is negatively influenced by the hens' age for the medium and big eggs which demonstrate the decreasing of the eggs incubation qualities.

The big eggs category is probably produced by the over weight hens and those who are of a low social position in the herd structure. Consequently the produced eggs have a short period of high incubation qualities and afterwards the dead embryos percent rise suddenly.

The hatching percent has the same dynamics as the dead embryos index. This shows that the sex ratio is optimal, the roosters are of good quality assuring very good fecundity percents. Withal it's point out the eggs quality influence on the incubation results. Certainly the adaptation of the foraging and maintenance conditions from the reproduction lots in correlation with the metabolic modifications, which appear with the hens' age advancing, will contribute to the loss reduction during the embryo development. Concerning the incubation factors we consider that they have to be related to the needs of the eggs with a weight of over 63 g.

The medium values of the determined incubation indexes during the experiment are situated at very good levels. The fecundity is around 96% for the small and big eggs and of 94.79% at the medium eggs category, differences which can be accidental. The loss through embryo mortality is maximal in the first week of incubation when take place the most profound morpho-physiological transformations.

Table 2

Incubation, eggs and chicken weight indexes average values during the control period

Determined parameters		Eggs weight category		
		Small	Medium	Big
Fecundity %		95.94	94.79	96.15
Dead embryos %	0-7 days of incubation	4.67	4.40	4,15
	8-22 days of incubation	3.16	2.27	3,75
	Total	7.83	6.67	7,90
Hatching %		88.11	88.12	88.25
Average eggs weight – g.		54.59	58.89	63.10
Average chicken weight		38.11	40.74	43.18
The chickens weight percentage from the average eggs weight %		69.81	69.17	68.43

We consider that the big eggs produced by the over-variants hens from the herd have the best incubation quality because they record just 4.15% of embryo mortality in the first week. In the next two weeks of incubation the embryo mortality is decreasing, the minimum percent being encountered in medium eggs. The explanation is given by the incubation factors level which is normal for this eggs category.

The period when it is imposed to action for the reducing of dead embryos number is represented by the last 2 weeks of incubation. The medium hatching percents of over 88% are optimum. The variations of fecundity and dead embryos values determine the same hatching percent for all eggs categories studied.

All the obtained chickens can be placed after weight in the first category. From the big eggs hatch big chickens which are weighty at that they represent less from the egg weight.

CONCLUSIONS

1. Fecundity is not influenced by eggs weight, but has the tendency to decrease with the hens' age advancing.
2. The losses through embryo mortality are higher at the small and big eggs.
3. Dead embryos percents are maximal in the first week being determined by the eggs incubation quality.
4. The incubation conditions during days 8 – 22 are optimal only for the eggs with medium weight, which determine the rise of embryos mortality in small and big eggs category.
5. The loss of chicken weight from that of the eggs is lower in the case of big eggs.

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