ASPECTS REGARDING THE INCUBATION PROCESS OF GUINEA FOWL POPULATION (*NUMIDA MELEAGRIS*) FROM BIHOR COUNTY

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Abstract

This study contains the partial results regarding the characterization and identification of some birds from the Galliformess order, Numida genre, Numida maleagris species, on the area of Bihor county. Researches have been made in three private farms in Oradea and in Bihor county area – in total 212 birds from Pekin species have been studied: 15 males and 90 females. The studied parametres refer to the analysisof the nesting process, meaning: % clear egs and % fertility, % egs with dead embrios at every biological control and cumulative, % hatchability, % hatching, the weight of the dead chicks and the distribution of these in quality categories. The fertility reached 84%, while the hatching capacity was at 69.8%, normal values for the populations under study.

Key words: Grey Guinea fowl, Eggs yield and laying intensity, incubation process analysis of the eggs issued from the studied Grey Guinea fowl.

INTRODUCTION

The population of Guineea Fawl on the European Continent has been decreased, the most important repopulation and spreading of this species has been made after year 1500 d.H, probably the time when they reached the Romanian teritory.

Regarding the process of breading of the Guineea Fawl in the North Western part of the conutry, we don't know exactly, but it is known that the local people breed these birds, in order to obtain traditional products from the meat that has special organoleptic properties

MATERIALS AND METHODS

The researches have been conducted on Grey Guineea Fawl (*Numida meleagris*) in three private farms in Oradea and Bihor County. The farms have been numbered C1, C2, C3: in C1 farm, 65 birds (10 males and 55 females), in C2 farm, 99 birds (16 males and 83 females) and in C3 farm, 88 birds (14 males and 74 females).

The biological material used in the experiments consisted in both gender birds, of different ages (hatching, young, sexually mature, and reproductively active). As biological material we also used nesting eggs, in different stages of the nesting process (beginning, peak, plateau, end), from the species that are part of this study.

As materials and working machinery we used, according to the testing method, digital technical and analytical scales, calipers, Petri plates and plane glass plates, small capacity incubators (50 – 200 eggs), portable egg analyzer, camera, computer, and so on.

For a better view of the quality of the nesting eggs we calculated two synthetic indicators, that reveal relevant information of the morphological and internal quality of the reproductive eggs and those are: the egg format indicator and the Haugh indicator.

The eggs under study have been compared with the reference values from the special literature. All the data we experimentally collected have been summarized and statistically processed.

RESULTS AND DISCUSSION

Using eggs harvested in every key moment of the nesting time(beginning, peak, plateau, end), we realized the analysis of the reproductive performances of the birds communities under study.

The nesting took 25 days, when the chicks started to knock the eggs – the hatching took place at 27 days after introducing the eggs in the incubator.

The parameters for the incubation were the following: temperature 37.7 Celsius, air humidity 70%, increasing up to 80% in the last 3 days out of 27; turning the eggs – every 2 hours during daytime, and twice during the night. Referring to the fertility of the eggs, we can say that this did not show any significant variations (88.5% - 91.9%), the average value for the total productive time was 89.3%.

The highest percentage of clear eggs was registered on the birds from population C3, and the lowest on the ones from population C2. In these terms, the selection of the reproductive males might be more intense, in order to improve the value of the parameter under study, since the standard requests a 97% fertility (see table 1).

Table 1

Incubation process analysis of the eggs issued from the studied Grey Guinea fowl

Laying moment	Analyzed population	No. of eggs	Fertility (%)	Dead embryos mirage I		Dead embryos mirage II		Hatched chickens	Ecloza-bility (%)	Hatching (%)
				pieces	%	pieces	%			
Start of laying (age: 29 weeks)	C1	454	90,1	61	13,4	44	9,7	304	74,3	67,0
	C2	754	91,5	109	14,5	64	8,5	517	74,9	68,6
	C3	646	87,3	78	12,1	46	7,1	440	78,0	68,1
	Total farms	1854	89,7	248	13,4	154	8,3	1261	75,8	68,0
Edge of laying (age: 35 weeks)	C1	836	91,1	114	13,6	69	8,3	579	76,0	69,3
	C2	1341	91,9	146	10,9	123	9,2	964	78,2	71,9
	C3	1165	87,8	129	11,1	68	5,8	826	80,7	70,9
	Total farms	3342	90,3	389	11,6	260	7,8	2369	78,5	70,9
Plateau lay (age: 45 weeks)	C1	3275	90,3	448	13,7	261	8,0	2249	76,0	68,7
	C2	5303	91,3	703	13,3	348	6,6	3791	78,3	71,5
	C3	4594	86,8	571	12,4	216	4,7	3199	80,3	69,6
	Total farms	13173	89,5	1722	13,1	825	6,3	9240	78,4	70,1
End of laying (age: 65 weeks)	C1	2194	89,2	335	15,3	136	6,2	1487	75,9	67,8
	C2	3560	89,8	506	14,2	174	4,9	2518	78,7	70.7
	C3	3110	86,3	416	13,4	127	4,1	2142	79,8	68,9
	Total farms	8864	88,5	1257	14,2	437	4,9	6147	78,4	69,3
Total:		27232	89,3	3616	13,3	1676	27	19016	78,2	69,8

Referring to the fertilization of the eggs, we can say that it did not show any significant variations (88.5 – 91.9%), the average value on the whole productive time being 89.3%. The highest percentage of clear eggs was registered on the birds from population C3, and the lowest on the ones from population C2. In these terms, the selection of the reproductive males might be more intense, in order to improve the value of the parameter under study, since the standard requests 97% fertility.

During the incubation biological controls (days 7 and 25) we found and removed the eggs with dead embryos from the incubators. So, we registered an average embryo mortality rate of 21.7% at the beginning of the egg laying, 19.4% in the pick time, 19.3% in the plateau phase, and 19.1% towards the end of the egg laying time.

The best performances were registered at the eggs produced by the birds from the C3 population, where the incubating machinery is also very modern, allowing the more precise monitoring of the incubation parameters, especially the relative humidity. Since they exceeded the maximum value accepted for this kind of birds (15.5%), the registered results suggest some problems in the technique of incubation.

The hatchability represents the technical indicator of evaluation of the ways the physical factors of the incubation requested for a normal embryo evolution were ensured, knowing the fact that this indicator is set by dividing the number of live chicks to the number of fertile eggs. (Fig. 1)

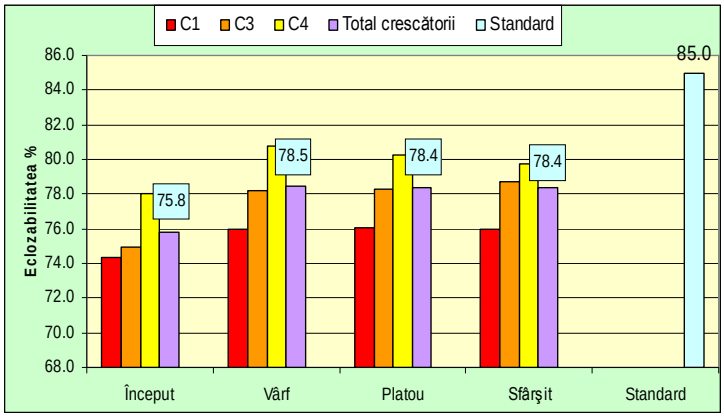

Fig.1 Hatchability of the eggs issued from the Grey Guinea fowl populations

The overall analysis of the incubation process is performed using the percentage of hatching, because this quantifies the number of eggs placed, as well as the number of viable chicks produced (picture 2).

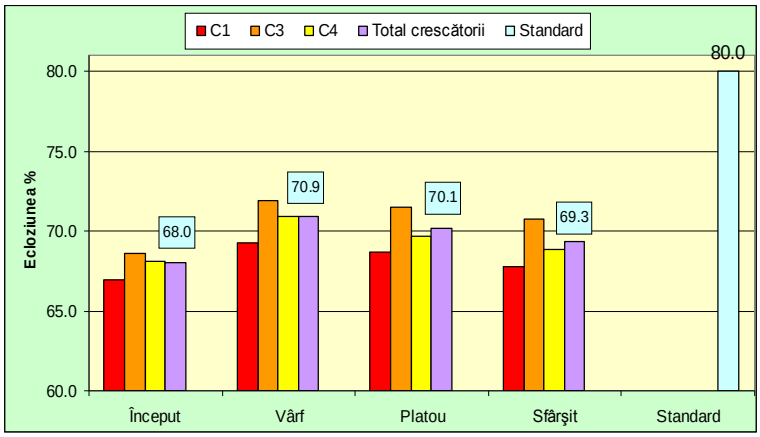

Fig.2– Hatching percentage of the eggs issued from the Grey Guinea fowl populations

The results were within the limits of 68.0% - 70.9% (69.3% on the full productive time), representing overall acceptable values, considering that the literature recommends obtaining a minimum of 80%.

CONCLUSIONS

The statistical parameters of the process of incubation showed an overall fertility value of 89.3% (95-97% in the standard), hatchability of 78.4% (standard is 85%) and a hatching percentage of 69.8% (compared to 80% that is allowed for this species).

Currently, we use of selection indicators that are adapted for each poultry line. They take into account the individual performance of the parents, the existence and intensity of additive variances, the percentage of followed characters, in order to obtain the desired result for improvement. For the future we aim to improve fertility percentage of obtained eggs through more rigorous selection of breeding males. (Dodu, 2010).

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