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 for Campbell and Indian Running. This implies that the conditions of incubation should be differentiated also. (Popescu - Micloşanu, 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 being 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°C 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°C, 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 presents the results obtained for Barbarie duck (for year 2015)

Table 2 presents the results obtained for Pekin duck (for year 2015)

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 4 presents the results obtained for Campbell duck (for year 2015)

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 be 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

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

<table>
<thead>
<tr>
<th>Breed</th>
<th>Specification</th>
<th>% E</th>
<th>% F</th>
<th>% M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbarie</td>
<td>Average</td>
<td>51</td>
<td>72</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>StDev</td>
<td>3.16</td>
<td>2.61</td>
<td>2.61</td>
</tr>
<tr>
<td></td>
<td>Coef</td>
<td>6.2</td>
<td>3.62</td>
<td>9.31</td>
</tr>
<tr>
<td>Pekin</td>
<td>Average</td>
<td>75</td>
<td>84.67</td>
<td>15.33</td>
</tr>
<tr>
<td></td>
<td>StDev</td>
<td>3.46</td>
<td>3.27</td>
<td>3.27</td>
</tr>
<tr>
<td></td>
<td>Coef</td>
<td>4.62</td>
<td>3.86</td>
<td>21.30</td>
</tr>
<tr>
<td>Indian Running</td>
<td>Average</td>
<td>58.89</td>
<td>75.33</td>
<td>24.67</td>
</tr>
<tr>
<td></td>
<td>StDev</td>
<td>2.62</td>
<td>1.52</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>Coef</td>
<td>4.45</td>
<td>2.02</td>
<td>6.16</td>
</tr>
<tr>
<td>Campbell</td>
<td>Average</td>
<td>76.89</td>
<td>85.56</td>
<td>14.22</td>
</tr>
<tr>
<td></td>
<td>StDev</td>
<td>2.37</td>
<td>2.94</td>
<td>3.36</td>
</tr>
<tr>
<td></td>
<td>Coef</td>
<td>3.09</td>
<td>3.44</td>
<td>23.66</td>
</tr>
</tbody>
</table>

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 being 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).

REFERENCES