

ARTIFICIAL INCUBATION OF GOOSE EGGS

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REVIEW, RESEARCH ARTICLE

Abstract

This article presents the method of artificial incubation of goose eggs. The breed of goose will be the Pomeranian goose.

Artificial incubation of goose eggs involves the use of specialized equipment to create a controlled environment that mimics the natural conditions required for the development of goslings inside the egg. The egg incubator used in this research has a capacity of incubating 20 goose eggs. It has an automatic egg turning system and a sensor that ensures automatic control of temperature and humidity, these features helping the research by maximizing the hatching rate because any significant deviations from the recommended conditions can affect the development of the embryos.

Before incubating the eggs must be kept at 10-15°C and a relative humidity of 75-80% for maximum of 7-10 days after being laid. If the eggs are older the risk is they will not hatch.

As conclusions we will see how many eggs hatched and we will discuss the reasons the others did not.

Keywords artificial, incubation, eggs, goose, temperature, humidity

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INTRODUCTION

Farmyard Pomeranian geese during breeding season lay on average 25-30 eggs (60-70 a year). After that, the goose, usually, starts the hatching period that lasts about 4-5 weeks, but she cannot cover more than 10-15 eggs. Also, some geese are not hatching, or they do not take care of the eggs as good as they should. A farmer's solution for these problems is an egg incubator.

By using an egg incubator, the farmer won't have to wait for a goose to hatch the eggs, he can check the eggs if they are fertile or damaged. Also, he will not use eggs older than 7-10 days. During the incubation process he can check the evolution of the embryos and help the goslings to emerge from the shell completely. A high-performance incubator will maximize the hatching rate.

MATERIAL AND METHOD

The documentation in order to prepare the paper "Artificial incubation of goose eggs" involved first of all the use of bibliographic sources, the most important where articles about the behavior of Pomeranian goose. We analyzed information about their egg laying and hatching. Also watching videos about helping the gosling coming out of the shell were useful.

Another method used was the experimental one. An egg incubator was used,

which has a capacity of 20 eggs, to create a controlled environment that mimics the natural conditions required for the development of goslings inside the eggs.

We followed the instructions in the manual that came with the incubator and observed the evolution of the embryos. At the end, the data of the research was analyzed, and conclusions were made.

The main objective of this paper was to observe the hatching process. To achieve this objective Table 1 is used to present the data we collected, which is analyzed comparatively.

The second objective of this paper was to establish the hatching rate.

And the third objective was to find the factors that influenced the development of the embryos.

RESULTS AND DISCUSSION

The first step of the research was preparing the egg incubator. It had to be cleaned and properly disinfected, then the parameters were checked: temperature, humidity, ventilation, and the flipping of the eggs. According to the manual these parameters change during the incubation period, Table 1. will guide us:

Parameters during incubation days

Table 1

Incubation	1-3 days	4-7 days	8-15 days	16-23 d.	24-25 d.	26 d. and above
Temperature	38.3°C	38.0°C	37.8°C	37.5°C	37.5°C	37.2°C
Humidity	60%	60%	60%	65%	65%	70%
Egg flipping	90 min 85°	90 min 85°	90 min 85°	90 min 85°	NOT	NOT

The incubator used was an MS- 64 and it has the following features presented in Fig.1

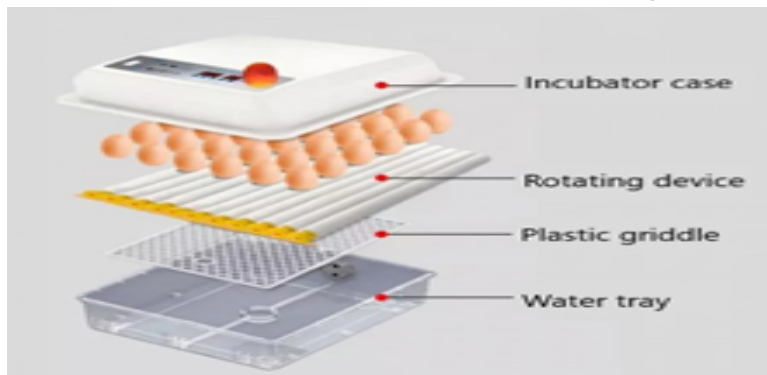


Fig. 1 Incubator layout

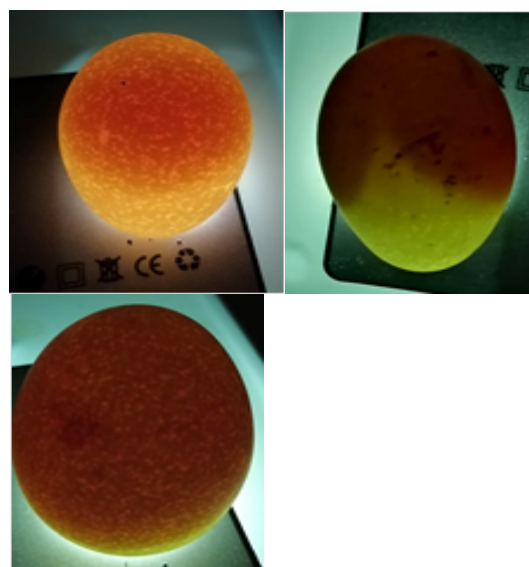
The incubator case has a display that shows the number of days, temperature, and the humidity inside. Also, the ventilation system is incorporated in the case, along with a candling lamp.

The second step was to check the eggs for imperfections (cracks, deformations of the shell) and to see if they are fertile or not, then place them in the incubator as seen in Fig 2. From twenty eggs only eighteen were fertile.

The third step was to check the eggs with the candling lamp, to see if the embryo is developing. This can be done after 3-4 days of incubating. In Fig.3 we can see a non-fecundated egg and in Fig.4 and 5 we can see a fecundated one. Three eggs were not having the bloody veins or a red spot that show the embryo is developing, and the egg yolk was not split.



Fig 1 Setting the eggs in the incubator.



The fourth step was to remove the rotating devices and place the eggs on a

plastic griddle. This process must be done on the 24th day.

The fifth and last step was to help the goslings to completely emerge out of the egg. The shell might be too hard for them, and they might need help cracking small pieces of the shell as shown in Fig. 6.

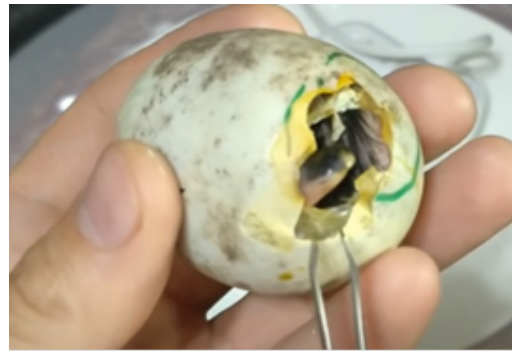


Fig. 3 Removing small pieces of eggshell.

This procedure must be done very carefully, because we might brake a blood vein and the bleeding might kill the gosling

CONCLUSIONS

We started the research with 20 eggs, only 18 were fecundated. After 4 days the eggs were checked again and in 3 of them the embryo was not developing, so those eggs were removed, and only 15 were left. During the incubation period the temperature, humidity and rotation were verified and kept in the right parameters.

On the 28th day of incubation 3 eggs were having small cracks and the goslings could be heard quaking. We removed small pieces of shell and let them do the rest. After 6-7 hours the 3 goslings were out of the shell, and we observed 5 more coming out of the shell.

On the 29th day 8 gosling were completely out, and 3 more eggs were cracked. By removing the shell from one egg we observed that the gosling was not fully developed. Unfortunately, he died.

On the 30th, 31st and 32nd day the remaining eggs were not showing any cracks, so we decided to stop the incubation. We cracked the eggs and discovered that all the 4 goslings were dead and not fully developed.

So, from 15 eggs only 10 goslings are alive and well.

The hatching rate was calculated by using the following formula:

$$\left(\frac{\text{No. eggs hatched successfully}}{\text{No. eggs laid}} \right) \times 100$$

The hatching rate obtained at the end of this research was:

$$(10/15) \times 100 = \underline{\underline{66.6\%}}$$

There are several reasons why goose eggs may not hatch, including:

1. Infertile eggs: If a male goose did not fertilize the eggs, they will not hatch.

2. Poor egg quality: If the eggs are not stored properly or if the mother goose is not healthy, the eggs may have defects that prevent them from hatching.

3. Incubation problems: The eggs must be kept at a constant temperature and humidity during incubation. If the temperature or humidity fluctuates too much or if the eggs are not turned regularly, they may not develop properly.

4. Genetic abnormalities: Some genetic abnormalities may prevent the eggs from hatching, such as those that cause deformities or developmental issues.

5. Environmental factors: Environmental factors, such as exposure to toxins or pollutants, can also affect the development of the eggs and prevent them from hatching.

6. Predation: If the eggs are not protected from predators, such as rats or snakes, they may be destroyed before they can hatch.

Reasons why the 5 goslings died:

- 1 gosling died after cracking the shell but because he was

not fully developed, he had the yolk not fully absorbed.

- 4 of them had not fully developed but they might have also suffocated inside because of the egg membrane being too hard.

During the last week of incubating the eggs were sprayed with warm water to soften the eggs shell and membrane, and the healthy goslings were too wet. They were left in the incubator to dry but after hours they were still wet, so we think those 4 eggs were sprayed too much and the humidity was too high, this leading to the suffocation of the goslings.

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