University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service
4-H Youth Development

CHICK EMBRYOLOGY – LESSON 6

Time Needed

- Flexible depending on the age of the students and level of discussion: 10-60 minutes

Skill/Grade Level

- Can be adapted for K-12 students

Core Area

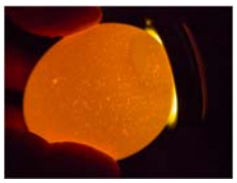
- Agriculture
- Animal production

Life Skills

- Participation in group discussion
- Sharing experiences and ideas

Educational Standards

- AA-2: Participate in conversation, discussion and group presentations
- AB-4: Record information accurately and completely
- AD-1: Perform basic and higher-level math operations
- AD-2: Solve problems using measurements skills



Objectives/Outcomes

- To evaluate the embryo development of the eggs set
- To continue data collection with regards to egg weight

Introduction to Content

This lesson will individually weigh and candle all the eggs in the incubator.

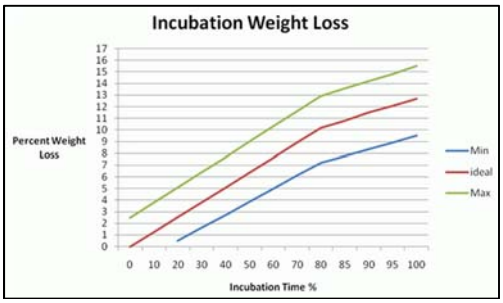
Curriculum

The materials required for this lesson are included.

Background Information

During the development of the embryo, metabolic water is produced. This metabolic water is about 12-14% of the initial egg weight. A minimum of 9-10% of this water needs to be lost to create a large enough air cell for the embryo to breathe after internal pipping (breaking through the inner shell membrane and into the air cell). If the total amount of moisture loss is more than about 17-18%, the embryo may get dehydrated and stick to the shell membranes. Infertile eggs do not produce metabolic water since they do not have an embryo. The rate of moisture loss, however, is about the same as for fertile eggs. The presence of an embryo does not influence the moisture loss, as this is determined by relative humidity, temperature and shell conductance.

It is important to monitor the weight of the eggs during the 21-incubation time. The eggs should be weighed periodically, and the weights recorded. The percent weight loss can then be calculated and graphed over time. In the graph below the time is represented as percent of incubation time since it can be applicable to any poultry species. For this project, use the days of the incubation rather than the percent of incubation time.



CHICKEN EMBRYOLOGY – Lesson 6

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Materials Needed

- Small flashlights
- Scale for weighing eggs
- Record sheets
- Pen for recording egg weights

Activity

1. Record the temperature in the incubator before starting
2. Open the incubator and remove egg 1
3. Weigh the egg and record weight
4. Use the flashlight to candle the egg and evaluate whether the egg is fertile and has a viable embryo
5. Return the egg to the incubator, turning it as scheduled when replacing the egg
6. Repeat steps 2-5 for each of the eggs
7. Have the students calculate the percent loss in egg weight and graph all points or the mean weight change
8. Open the eggs that were clear or had blood rings to verify the conditions of the embryos

Apply

Share: What did you learn?

Process: What part of the activity taught you the most?

Generalize: What was the most important thing you learned?

Authors

Dr. Jacquie Jacob, Poultry Extension Project Manager, Department of Animal and Food Sciences, University of Kentucky