

 **Activity 9.1.4 The Eggs Have It****Purpose**

Grading eggs is a skill that is both practical and useful for home producers and consumers as well as commercial producers. It allows for a common standard so that producers, retailers, and consumers have a common language and expectation of the product. Advantages of established grades for a product include impartial assessment, consistent quality, incentive and payment for high quality products, and uniformity.

USDA uses exterior and interior qualities to grade eggs. Three main classifications, Grade AA, Grade A, and Grade B assist graders in assessing the quality of eggs. Exterior factors include cleanliness and soundness of the shell. For instance, eggs classified as Grade B have shells that are slightly dirty or abnormal and therefore not used for shell eggs. Conditions of the white (albumen), the yolk, the size of the air cell, and the presence of blood or meat spots determine the interior quality. To earn Grade AA the yolk of the egg must be tall, round, and firm while the albumen is thick. Can you determine the good eggs?

Materials**Per pair of students:**

- 6 eggs
- Paper plate
- Egg candler
- Bowl

Per student:

- *Activity 9.1.4 Egg Grading Guide*
- Pencil
- *Agriscience Notebook*

Procedure

You and your partner will be using both the candling and breakout methods to determine the grade of several eggs. Follow the steps below for each procedure and assign each egg a quality grade.

Part One – Egg Candling

1. Read *Activity 9.1.4 Egg Grading Guide*. As you candle each egg use the guide for your reference.
2. Select an egg and hold it between your forefinger and thumb with the narrow end pointing down.
3. To set the content of the egg in motion, quickly flick your wrist from back to front twirling the egg. Stop sharply without moving your arm and elbow. This spins the contents of the egg. Take care to avoid hitting the egg on the table or candling light as you do this.
4. While the contents are spinning, place the egg at a 45° angle against the light.
5. Observe the size of the air cell, the outline of the yolk, and look for any blood or other dark spots within the egg.
6. You may need to spin the egg a second time to finish your observations.
7. Replace the egg in the holder in the spot it came from. It is important to keep the eggs in the same order.
8. Record your observations in Table 1 of *Activity 9.1.4 Student Worksheet*.
9. Take turns candling each egg.
10. Repeat Steps 1 – 6 for each egg in your test sample.

Part Two – Breakout Method

1. Beginning with the first egg from the candling exercise, crack the egg against a bowl or the table.
2. Carefully open the egg onto the paper plate. Drop the contents smoothly and quickly and avoid getting pieces of shell in the egg. Hold the egg low over the plate as you let it drop.
3. Set the shell aside and observe the thin albumen, thick albumen, and yolk.
4. Record your observations in Table 2 of *Activity 9.1.4 Student Worksheet*.
5. Slide the egg into the bowl.
6. Repeat Steps 1 – 5 for your remaining eggs, alternating the breaking of eggs with your partner.
7. Clean up as directed by your teacher.

Conclusion

1. As a consumer, why should you know and understand the grading systems of agricultural products?
2. What is a major limitation of the breakout method?
3. What other application might the use of candling eggs have in production agriculture?
4. How were your observations of the interior quality of eggs different from candling and the breakout method?

Name: _____

Activity 9.1.4 Student Worksheet

Table 1. Interior Quality by Candling

Describe the following characteristics of each egg as you observe it with the candler. Use *Activity 9.1.4 Egg Grading Guide* as a reference as you candle each egg.

Egg	Air cell	White (albumen)	Yolk	Spots	Grade
1					
2					
3					
4					
5					
6					

Table 2. Interior Quality by Breakout

Describe the following components of each egg as you break it open. Use *Activity 9.1.4 Egg Grading Guide* as a reference for determining the grade.

Egg	Thick albumen	Thin albumen	Yolk	Spots	Grade
1					
2					
3					
4					
5					
6					