



# EDUCATIONAL TOOLKIT

---

GET TO KNOW IOWA EGG FARMING



Dear Iowa Teacher,

The Iowa Egg Council sees the need to educate youth about where their food comes from, as children are several generations removed from the farm.

Our goal with this toolkit is to provide you with educational and ready-to-use classroom materials to help students gain a better understanding of how eggs are produced and share the positive stories of Iowa Egg Farmers. **The egg industry is essential to Iowa's economy, providing over 3,500 jobs** across the state annually and contributing more than \$2 billion in total sales per year. Connecting Iowa's essential egg industry back to the classroom is our mission behind the Educational Toolkit.

The printed toolkit is an excellent resource for classroom use, providing hands-on and tangible lessons for the curious minds of students and teachers alike.

The resources in this toolkit are geared toward elementary students and highlight:

- **Iowa egg farming facts and the industry's impact on the state's economy**
- **Iowa egg farming family profiles**
- **Egg nutrition and safety information**

We invite you to use this toolkit in your classroom to educate students about the importance of agriculture in Iowa and the role eggs play in a healthy diet. Educators can access all digital resources online at [www.iowaegg.org/schools](http://www.iowaegg.org/schools).

Contact *Anne Wemhoff, Director of Marketing and Communications* at [anne@iowaegg.org](mailto:anne@iowaegg.org) with further questions or inquiries.

## **Iowa Egg Council Educational Toolkit Table of Contents**

About Iowa Egg Farming one pager.....	section 1
My Family's Egg Farm book.....	section 2
Iowa Agriculture Literacy Foundation Lesson Plan - Egg Nutrition.....	section 3
Poultry Ag Mag – hard copy.....	section 4
National Agricultural Literacy Curriculum.....	section 5
1. Eggs: From Hen to Home	
2. Eggs: Protein MVP	



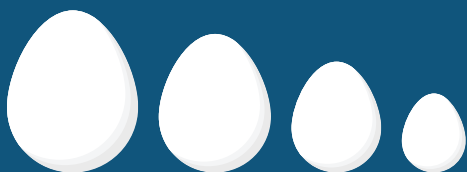
# About Iowa Egg Farming

## GET TO KNOW IOWA EGGS

Iowa is the largest egg producing state in the nation, producing more than 16 billion eggs every year. Iowa egg farming families work every day to ensure safe, nutritious eggs are available for consumers.

### NUTRITION FACTS

- Eggs contain **6 grams of high-quality protein** and all **9 essential amino acids**.
- Eggs are naturally **gluten free**.
- One large egg only has **70 calories**.



Eggs can be classified as either **jumbo, extra-large, medium, small, or peewee**. These sizes are based on their net weight in ounces per dozen.



Eggs have a **long shelf life**. Store bought eggs that have been washed need to be refrigerated, and they can **last up to 3-4 weeks**.

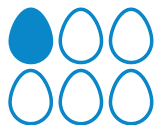


The breed of the chicken determines eggshell color. Usually, white hens lay white eggs, and brown hens lay brown eggs.

### IOWA EGG FACTS



Iowa is number one in egg production in the entire United States, producing over **15% of all eggs within the country**.



Iowa egg farmers are responsible for almost **1 in every 6 eggs** consumed in the United States each year!



The Iowa egg industry is a very important part of Iowa's economy, where egg producers **employ 3,500 people** across the state every year.



Iowa egg farmers help to drive the Iowa economy through their contribution of more than **\$2 billion in total sales**.



# WHAT IOWA EGG FARMERS MEAN TO THE COMMUNITY



In 2018, the Iowa Egg Council initiated a program called Cracking Hunger with the goal to donate about 35,000 dozen eggs per month to Iowa food banks.

Over the years, the program has expanded. Iowa egg farmers are now donating 25,000 dozen eggs per month to Iowa food banks!

## HOW FARMERS CARE FOR THEIR ANIMALS AND PRODUCE HIGH-QUALITY EGGS

- In Iowa, all egg producers take **precautions to prevent the introduction or spread of diseases** amidst their flocks.
- **The health and well-being** of hens is always a top priority for farmers.
- By practicing biosecurity, Iowa egg **farmers are taking care of their animals** while still making sure the **best quality eggs** are being brought to your table.

## MEET AN IOWA EGG FARMING FAMILY



Meet the Dean brothers! JT, Matt and Ross Dean are second generation egg farmers. Their father started the first farm in 1978, since then, they have grown to producing millions of eggs every year!

*"Our roots are planted deep in Iowa and in agriculture. Being an Iowa producer means we are providing a safe, nutritious product for families to enjoy in Iowa and around the country, and that is a privilege."*

# My Family's Egg Farm

by Katie Olthoff



## Egg Nutrition

Target Grade Level: 3<sup>rd</sup> Grade

Full Lesson Plan: <https://www.iowaagliteracy.org/Article/Egg-Nutrition>

This document is meant for you, the teacher, to use to convert the lesson plan into a virtual learning module for your students. You can use the steps outlined below to create different elements of a Google Classroom lesson or other online learning module. You can also send the steps directly to your students in a PDF, present them in a virtual meeting, or plug them into any other virtual learning platform you use. Find more virtual lessons here: [Virtual Learning](#).

Engage	<p>Do you know the song Head, Shoulders, Knees and Toes? Try singing it with these new words:</p> <p>Brain, muscles, heart and stomach, Heart and stomach. Brain, muscles, heart and stomach, Heart and stomach. And eyes, and ears, and mouth, and bones. Brain, muscles, heart and stomach, Heart and stomach. Today we will be learning how eggs are good for brain health, building muscle, maintaining a healthy heart, staying full longer after a meal, and even helping with good eyesight.</p>
Explore	<p>Next, read <i>My Family's Egg Farm</i> by Katie Olthoff.</p> <ul style="list-style-type: none"> <li>• <a href="#">My Family's Egg Farm</a></li> </ul>
Explain	<p>Eggs provide valuable sources of protein. Watch the video to learn more about foods in the protein group and why they are important.</p> <ul style="list-style-type: none"> <li>• <a href="#">My Plate. The Protein Group</a></li> </ul> <p>Now, think about what you ate yesterday. Write down the protein foods that you ate. Did you eat different types of protein? If so, way to go!</p>
Elaborate	<p>Eggs are good for the whole body! Read the slides to learn why eggs are good for your brain, eyes, muscles, heart, blood, stomach, and bones!</p> <ul style="list-style-type: none"> <li>• <a href="#">Excellent Eggs</a></li> </ul>
Evaluate	<p>Commercials can affect our decisions about our health including what to eat. Watch the commercials below to see how eggs have been marketed over the years.</p> <ul style="list-style-type: none"> <li>• 1978: <a href="https://youtu.be/DkHsUSfqd1U">https://youtu.be/DkHsUSfqd1U</a></li> <li>• 2000: <a href="https://youtu.be/6nFLecjWXG0">https://youtu.be/6nFLecjWXG0</a></li> <li>• 2019: <a href="https://youtu.be/vJYroAkA3Mo">https://youtu.be/vJYroAkA3Mo</a></li> </ul> <p>Now, write a script for a commercial that showcases the health benefits of eating eggs. Use at least one fact from the <a href="#">Excellent Eggs</a> slides.</p>



## What is Poultry?

Chances are, you come in contact with a poultry product almost every day! But what exactly is poultry? Poultry is the term used to describe birds that are domestic, not wild, that are raised for their products, such as meat, eggs, or feathers. Chickens, ducks, and turkeys are common examples of poultry in the United States.

Poultry are raised on farms and in backyards around the United States so that you and I can choose to enjoy food like chicken nuggets, chicken salad, and turkey on Thanksgiving! Did you know that the average person consumes about 100 pounds of poultry meat in a year? That's a lot of chicken nuggets!

Poultry, especially chickens, are also important for another product they produce – eggs! Eggs are an essential ingredient in a lot of livestock farms and other recipes. The average American eats over 250 eggs a year, so it's a good thing that an average laying hen on a farm can produce over 280 eggs per year!

Poultry are an important part of our economy and daily life in the United States. In the next time you enjoy a chicken nugget or a scrambled egg, thank a poultry farmer!



## TURKEY FACT

If it were up to Benjamin Franklin, he would have chosen the turkey over the eagle as a symbol for our country! He called the American nation a "respectable bird..."

## Turkeys & Chickens

What has two legs, feathers, and a beak? If you answered chicken or turkey you're correct! Although they share similar characteristics with birds, the domesticated chicken and turkey are quite unlike a wild bird you see outside your window. Even though they are farmed, they are not called or being kept domestic and they commonly only eat their favorite foods for chicken feed and protection.

The two main types of poultry raised in the United States for meat production are chickens and turkeys. Their partners, roosters and hens, they're quite different! A turkey is larger, with a longer neck and bigger body. A chicken is smaller than a turkey, with a shorter neck and more compact body. Both birds are raised in flocks, except for their hardy guinea fowl, one really big. There are many different breeds of chickens and turkeys, and their feathers and beaks can vary in color!

There's not just one way to raise them and eat them. Some people have poultry in their backyards, while others use large amounts of chickens to make up their poultry farm.

## A Turkey for the President

Meet John Burkard and his family. They raised the turkey presented to and pardoned by President Obama for Thanksgiving in 2013. Let's get to know a little more about John and his turkey!



**Q:** How did you and I have been on our farm in Dodge, Minnesota since 1990? I am a fourth-generation turkey farmer. We grow about 100,000 turkeys every year, mostly for the holiday market during Thanksgiving and Christmas. The turkey business we get, called turkeys, come in our flock of one day old and are given them for about 12 weeks before they are processed, and then marketed as your favorite turkey. Most of the turkeys we grow on our farm are female turkeys, hens, and some in a white we will grow a flock of more, which are the male turkeys.

**Q:** What is a lot of turkeys? When do you like more about having a turkey farm?

**A:** It's a lot of work, and it's a lot to watch them grow from day old youth. I also appreciate the fact that my whole family can be out in the farm with me to take care of our turkeys. There are all kinds of jobs that we can do, and we can help each other, and that's a lot of fun to watch it grow. It's one of the best things about life on the farm.

**Q:** How were you and your family chosen to raise a bird for the President? That's quite an honor!

**A:** I have been an executive committee member of the National Turkey Federation (NTF) since 2007, and we were chosen to raise the turkey that year. One of the decisions I have to make is to grow and present the turkey for the week of Thanksgiving.

This year's NTF turkey was on our farm on July 15th of 2013. It was a week of age, we picked her up at the farm, and we spent a lot of time raising her turkey. We also played a lot of games and had a lot of fun with her as they would be raised up to the week of Thanksgiving. During the week, there were several events that we did on the farm, and we were chosen to raise the turkey for the President. We were chosen to raise the turkey for the President, and we were chosen to raise the turkey for the President.



Raising the National Thanksgiving Turkey was a great honor for my family and I, and it was definitely unforgettable!







Relevancy and Engagement  
[agclassroom.org/ia/](https://agclassroom.org/ia/)

---

# Eggs: From Hen to Home

## Grade Levels

3 - 5

## Purpose

Students trace the production path of eggs, beginning on the farm and ending in their home and identify the culinary uses and nutritional benefits of eggs. **Grades 3-5**

## Estimated Time

2 hours

## Materials Needed

### Activity 1: From Hen to Home

- Eggs 101 (<https://www.incredibleegg.org/professionals/k-12-schools/eggs-in-the-classroom/eggs-101-videos>) video
- Egg Production Cards  
([https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg\\_Production\\_Cards.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg_Production_Cards.pdf)), 1 set per group cut apart
- From Hen to Home Discovery Sheets  
([https://cdn.agclassroom.org/media/uploads/lp718/Hen\\_to\\_Home\\_Discovery\\_Sheets\\_USDA\\_Approved.pdf](https://cdn.agclassroom.org/media/uploads/lp718/Hen_to_Home_Discovery_Sheets_USDA_Approved.pdf))
- Poster paper, 1 per group
- Markers

### Activity 2: Build a Balanced Breakfast

- MyPlate Cards (<https://incredibleegg.wpengine.com/wp-content/uploads/2020/07/MyPlate-Game-2020-1.pdf>)
- Container to hold cards
- MyPlate Poster (<https://agclassroomstore.com/myplate-activity-poster/>)\* or MyPlate Image  
([https://cdn.agclassroom.org/media/uploads/lp718/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/lp718/MyPlate_blue.png))
- Paper/plastic plates, 1 per group

- Paper/plastic cups, 1 per group
- Tape
- Crayons, colored pencils, or markers

\*The MyPlate Poster is available for purchase from [agclassroomstore.com](https://agclassroomstore.com) (<https://agclassroomstore.com/myplate-activity-poster/>).

## Essential Files (maps, charts, pictures, or documents)

- Egg Production Cards  
([https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg\\_Production\\_Cards.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg_Production_Cards.pdf))
- Hen to Home Discovery Sheets  
([https://cdn.agclassroom.org/media/uploads/lp718/Hen\\_to\\_Home\\_Discovery\\_Sheets\\_USDA\\_Approved.pdf](https://cdn.agclassroom.org/media/uploads/lp718/Hen_to_Home_Discovery_Sheets_USDA_Approved.pdf))
- MyPlate Image ([https://cdn.agclassroom.org/media/uploads/lp718/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/lp718/MyPlate_blue.png))

## Vocabulary Words

**breed:** a group of animals or plants within a species having a distinctive appearance and typically having been developed by deliberate selection

**candle:** test an egg for freshness or fertility by holding it to the light

**consumer:** a person who buys and uses goods and services

**coop:** an enclosure where poultry live

**domestic:** an animal that has been tamed and kept by humans as a work animal, food source, or pet

**incubate:** to provide heat so as to promote embryonic development and the hatching of young

**leavening:** a substance used in dough or batter to make it rise

**nutrient:** a substance that provides nourishment essential for growth and the maintenance of life

**poultry:** domestic fowl, such as chickens, turkeys, ducks, and geese

**protein:** an essential nutrient responsible for building tissue, cells, and muscle

## Did You Know? (Ag Facts)

- The process of an egg traveling from "Hen to Home" takes approximately a week or less.
- When refrigerated, eggs have a shelf life of 3-5 weeks.
- The majority of eggs purchased in a grocery store have white shells and were produced by a White Leghorn, a breed of chicken known for their egg production.

## Background Agricultural Connections

Eggs are produced by **hens** (female chickens) on farms. Hens begin laying eggs when they are 4-6 months old. A good laying hen will produce 6-7 eggs per week for the first 1-2 years of her life.

Chickens are **domestic** fowl, as are turkeys, ducks, and geese. All species of **poultry** lay eggs.

Chicken eggs are most commonly consumed in the United States.

Eggs come in various shell colors, although there is no nutritional difference between different colored eggs. The shell color depends upon the **breed** of chicken. Eggs can be white, tan, brown, or even a light shade of green. Chickens can be raised on a large or small scale. A few chickens can easily be raised in a backyard to provide eggs for a family. Eggs that are purchased from a store likely came from a farm. Chickens live in houses called **coops**. They eat a special feed that includes grains, such as ground up corn and wheat.

Eggs that are produced for the purpose of eating will never develop into a chick because the eggs are not **fertilized** by a rooster and they are never **incubated** (kept warm). On a farm, eggs are collected each day. The eggs go through a processing plant where they are washed, checked for cracks and abnormalities, sized, graded, and then packaged. The contents of an egg can be seen by a method called **candling** (holding it up to a light). If an egg has an abnormal shape or appearance, it is discarded and the remaining eggs are packaged into cartons. The eggs leave the processing plant in refrigerated trucks which deliver them to retail grocery stores to be sold to **consumers**. Eggs are graded into three classifications according to the United States Department of Agriculture (USDA) grading system—AA, A, and B. The grade of an egg is determined by the interior and exterior quality of the egg. Grade AA eggs have thick, firm whites and the yolks are free from any defects. Their shells are clean, smooth, and oval in shape. Grade A eggs have a slightly lower interior quality. Grade B eggs may have slight stains and be irregular in shape. Grade B eggs are not sold in supermarkets, but are used in powdered or liquid egg products. There is no nutritional difference between the different grades.

Egg size is determined by the average weight per dozen. Jumbo eggs are 30 oz. per dozen, extra large are 27 oz., large are 24 oz., medium are 21 oz., small eggs are 18 oz. per dozen. The age, breed, and weight of the hen as well as environmental factors influence the size of an egg. As a hen ages, the size of her eggs increase. Underweight birds lay smaller eggs. Stress, heat, overcrowding, and poor nutrition can also result in smaller eggs. Eggs are weighed by electronic scales and packaged by size based on weight.

### **Egg Nutrition**

The 2020-2025 Dietary Guidelines for Americans (<https://www.dietaryguidelines.gov/>) includes eggs in all three of its healthy eating patterns. The **nutrients** in eggs support brain development in early life and health across the lifespan.<sup>1</sup> Eggs are a good source of **protein** and are a good or excellent source of eight essential nutrients including choline ([https://www.eggnutritioncenter.org/articles/choline-throughout-the-life-span/?utm\\_source=Eggs+in+Schools+%28Nutrition%29&utm\\_campaign=77a5073331-eis-dga-email-07282020&utm\\_medium=email&utm\\_term=0\\_54364dd0bd-77a5073331-245994633](https://www.eggnutritioncenter.org/articles/choline-throughout-the-life-span/?utm_source=Eggs+in+Schools+%28Nutrition%29&utm_campaign=77a5073331-eis-dga-email-07282020&utm_medium=email&utm_term=0_54364dd0bd-77a5073331-245994633)), an under-consumed nutrient the Dietary Guidelines recommend to support brain health.

Eggs are one of the few natural food sources of vitamin D, which along with calcium is critical for building strong bones. Egg yolks contain lutein and zeaxanthin, carotenoids that can support eye

health as you age. The science on dietary cholesterol and eggs continues to grow and demonstrates that eggs are an important part of healthy dietary patterns across the lifespan.<sup>2</sup>

Numerous research studies show that students who eat breakfast—either at school or at home—have better academic performance and behavior.<sup>3</sup> When children eat better, they learn better. A well-balanced breakfast, rich in protein, whole grains, fruits/vegetables and low-fat/fat-free milk gives children the energy they need to let learn and stay active. The protein in eggs, in combination with a well-balanced breakfast, can help keep children satisfied and fueled. Breakfast options that include eggs present opportunities to include other nutrient-dense foods encouraged by the 2020-2025 Dietary Guidelines for Americans, such as vegetables and whole grains.

Egg consumption by American children and adolescents is associated with intake of several nutrients, including higher protein, polyunsaturated, monounsaturated and total fat, alpha-linolenic acid, docosahexaenoic acid, choline, lutein + zeaxanthin, vitamin D, potassium, phosphorus, and selenium.<sup>4</sup>

Though eggs can be prepared in various ways for breakfast, they are also important and commonly used in other foods. Eggs help bind ingredients together, act as a **leavening** agent, and help to thicken soups and sauces.

## Interest Approach - Engagement

1. Write the words *Breakfast*, *Lunch*, and *Dinner* on the board. Ask the students to name as many ways they can think of to prepare eggs for the different mealtimes. Write a list of their ideas under each mealtime. Examples could include:
  - **Breakfast:** scrambled, poached, omelet, boiled, baked, over easy, over hard
  - **Lunch:** frittata, quiche, egg salad, egg sandwich
  - **Dinner:** deviled eggs, Pad Thai, pasta salad
2. Explain to the students that they are going to explore where eggs come from, how they get to the grocery store, and how they can be part of a healthy diet.

## Procedures

### Activity 1: From Hen to Home

1. Watch the video Eggs 101 (<https://www.incredibleegg.org/professionals/k-12-schools/eggs-in-the-classroom/eggs-101-videos>).
2. Ask the students, "What are the steps involved in getting eggs from the farm to the grocery store?"
3. Organize the students into six groups. Provide each group with a set of Egg Production Cards ([https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg\\_Production\\_Cards.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/13/Egg_Production_Cards.pdf)). Ask the groups to work together to place the cards in the order that show the steps it takes to get eggs from the farm to the supermarket.



4. Explain to the students that technology is used in every production step to increase efficiency and decrease costs. Ask the students to describe some of the technologies they noticed from the videos.
5. Assign each group one of the production steps below to explore. Provide the groups with the From Hen to Home Discovery Sheet ([https://cdn.agclassroom.org/media/uploads/lp718/Hen\\_to\\_Home\\_Discovery\\_Sheets\\_USDA\\_Approved.pdf](https://cdn.agclassroom.org/media/uploads/lp718/Hen_to_Home_Discovery_Sheets_USDA_Approved.pdf)) that corresponds with their production step.
  - Hens lay eggs
  - Eggs are washed
  - Eggs are checked for cracks
  - Eggs are sized
  - Eggs are graded
  - Eggs are packaged and shipped
6. Have each group read the information on their discovery sheet, watch the video, and create a poster to present to the class. Each poster should include the following information:
  - Name of the production step.
  - What happens during this step.
  - Technology that is used during this step.
  - Interesting information about this step.
7. Allow each group time to share their poster with the class.

## Activity 2: Build a Balanced Breakfast

**Teacher Preparation:** Prior to this activity, print an equal number of MyPlate Cards

(<https://incredibleegg.wpengine.com/wp-content/uploads/2020/07/MyPlate-Game-2020-1.pdf>) (5), so there is one food group card for each student. Cut the cards apart and place into a container.

1. Ask the students, "What are the five food groups?" (*fruits, vegetables, grains, protein, and dairy*)
2. Once all food groups have been identified, ask the students to name some foods that fit into each group.
  - **Fruits:** Any fruit or 100% fruit juice. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed.
  - **Vegetables:** Any vegetable or 100% vegetable juice. Vegetables may be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed.
  - **Dairy:** All fluid milk products, calcium-fortified soymilk (soy beverage), and foods made from milk that retain their calcium content. Foods made from milk that have little to no calcium content, such as cream cheese, cream, and butter, are not considered to be part of this food group.
  - **Proteins:** All foods made from eggs, meat, poultry, seafood, beans and peas, processed soy products, nuts and seeds.

- **Grains:** Any food made from wheat, rice, oats, cornmeal, barley, or another cereal grain. Bread, pasta, oatmeal, breakfast cereals, tortillas, and grits are examples of grain products. Grains are divided into two subgroups—whole grains and refined grains.
3. Use the MyPlate Poster (<https://agclassroomstore.com/myplate-activity-poster/>) or project the MyPlate Image ([https://cdn.agclassroom.org/media/uploads/lp718/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/lp718/MyPlate_blue.png)) onto a large screen. Introduce MyPlate and discuss the importance of eating balanced meals that include the different food groups.
  4. Have each student close their eyes and pick a card from the container.
  5. Organize the class into groups of five students. Each student in a group must have a different MyPlate Card. (If the number of students in the class is not divisible by five, either have the extra students double up in one of the other groups or give the smaller group the extra cards needed to cover all five food groups).
  6. In their groups, have the students take turns sharing which food group they have. Ask the groups to plan a well-balanced breakfast. Students can suggest foods for a meal from the food group they represent.
  7. Provide each group with a paper/plastic plate and cup. Instruct them to turn their MyPlate Card over and draw the breakfast food from their food group. When the drawings are complete, attach them on the plate or cup with tape.
  8. Invite each group to share their well-balanced breakfast plate with the rest of the class.
  9. Lead a discussion about planning and eating balanced breakfasts. Use the following points to guide the discussion:
    - Eating a balanced breakfast (including at least three of the five food groups) can help you grow and learn better.
    - Eating breakfast provides you with energy.
    - High-quality protein options, like eggs, are important to help you stay full, so you can focus on your schoolwork.
    - Eggs contain protein and important nutrients that help you stay focused in school.
    - Eggs can be eaten for breakfast, lunch, dinner, or snacks.

### Concept Elaboration and Evaluation

After conducting these activities, review and summarize the following key concepts:

- A female chicken, called a hen, is raised on a farm to produce eggs for us to eat.
- Eggs are produced on a farm, cleaned, sized, graded, and packaged at a processing plant, transported to a grocery store, and then finally sold to a consumer.
- Eggs are an important part of our diet because they are a good source of protein and contain other nutrients.

## Enriching Activities

- If any of your students have their own chickens, invite the students to bring some eggs from home. Compare the size and color(s) of the eggs with those that are typically purchased from

the grocery store.

- Visit the *Interactive Map* website and view the interactive map for Chickens (<http://www.nefbmap.org/map.php?P=41&PV=0>) in the United States. This map shows how many laying hens are in each state. Where does your state rank?

## Sources

1. [https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport\\_of\\_the\\_2020DietaryGuidelinesAdvisoryCommittee\\_first-print.pdf](https://www.dietaryguidelines.gov/sites/default/files/2020-07/ScientificReport_of_the_2020DietaryGuidelinesAdvisoryCommittee_first-print.pdf) (<https://www.eggnutritioncenter.org/downloads/toolkits/EggNutrients-for-Health.pdf>)
2. <https://www.incredibleegg.org/articles/eggs-and-heart-health> (<https://www.incredibleegg.org/articles/eggs-and-heart-health>)
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3737458/> (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3737458/>)
4. <https://pubmed.ncbi.nlm.nih.gov/31121847/> (<https://pubmed.ncbi.nlm.nih.gov/31121847/>)

## Acknowledgement

Activity 2 was adapted with permission from The Incredible Egg Build a Balanced Breakfast with MyPlate (<https://www.incredibleegg.org/professionals/k-12-schools/eggs-in-the-classroom/games/myplate-activity>) activity.

## Suggested Companion Resources

- Chick Life Cycle (<https://iowamatrix.agclassroom.org/matrix/resource/552/>)
- Chickens on the Farm (<https://iowamatrix.agclassroom.org/matrix/resource/610/>)
- Chicks & Chickens (<https://iowamatrix.agclassroom.org/matrix/resource/237/>)
- Daisy Comes Home (<https://iowamatrix.agclassroom.org/matrix/resource/611/>)
- Farm Animals: Chickens (<https://iowamatrix.agclassroom.org/matrix/resource/365/>)
- How Food gets from Farms to Store Shelves (<https://iowamatrix.agclassroom.org/matrix/resource/360/>)
- One Egg (<https://iowamatrix.agclassroom.org/matrix/resource/537/>)
- One Hen: How One Small Loan Made a Big Difference (<https://iowamatrix.agclassroom.org/matrix/resource/625/>)
- The Chicken-Chasing Queen of Lamar County (<https://iowamatrix.agclassroom.org/matrix/resource/712/>)
- The Hen Who Sailed Around the World (<https://iowamatrix.agclassroom.org/matrix/resource/1066/>)
- Tillie Lays an Egg (<https://iowamatrix.agclassroom.org/matrix/resource/748/>)
- Zinnia and Dot (<https://iowamatrix.agclassroom.org/matrix/resource/749/>)
- All About Eggs (<https://iowamatrix.agclassroom.org/matrix/resource/742/>)
- Eat Happy Project video series (<https://iowamatrix.agclassroom.org/matrix/resource/822/>)

- Eggs 101: An Egg's Journey from the Farm to Our Tables  
(<https://iowamatrix.agclassroom.org/matrix/resource/779/>)
- Virtual Egg Farm Field Trips (<https://iowamatrix.agclassroom.org/matrix/resource/780/>)
- Nutrition Posters (<https://iowamatrix.agclassroom.org/matrix/resource/1007/>)
- Eggs in Schools (<https://iowamatrix.agclassroom.org/matrix/resource/1065/>)

## Author

Lynn Wallin

## Organization Affiliation

National Center for Agricultural Literacy

*Powered by the National Agricultural Literacy Curriculum Matrix ([agclassroom.org](https://agclassroom.org))*





Relevancy and Engagement  
[agclassroom.org/ia/](https://agclassroom.org/ia/)

---

# Eggs: Protein MVP

## Grade Levels

3 - 5

## Purpose

Students explore the importance of protein to a healthy diet and discover that eggs are a nutritious food and a good source of protein. [Grades 3-5](#)

## Estimated Time

1 hour

## Materials Needed

### Interest Approach — Engagement:

- Food Match Cards  
([https://cdn.agclassroom.org/media/uploads/2019/08/23/Food\\_Match\\_Cards\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Food_Match_Cards_1.pdf))
- MyPlate Activity Poster (available for purchase from [agclassroomstore.com](https://agclassroomstore.com)  
(<https://agclassroomstore.com/myplate-activity-poster/>)) or MyPlate Image  
([https://cdn.agclassroom.org/media/uploads/ip719/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/ip719/MyPlate_blue.png))

### Activity 1: The Importance of Protein

- *Good Enough to Eat: A Kid's Guide to Food and Nutrition* by Lizzy Rockwell
- MyPlate Activity Poster or MyPlate Image  
([https://cdn.agclassroom.org/media/uploads/ip719/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/ip719/MyPlate_blue.png))
- Daily Protein Foods Table  
([https://cdn.agclassroom.org/media/uploads/ip719/Daily\\_Protein\\_Foods\\_Table.png](https://cdn.agclassroom.org/media/uploads/ip719/Daily_Protein_Foods_Table.png))
- Food Model Cards (available for purchase from [agclassroomstore.com](https://agclassroomstore.com)  
(<https://agclassroomstore.com/food-models/>)) or *Protein Foods List*
- Protein Daily Requirements  
([https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein\\_Daily\\_Requirements\\_Activity\\_Sheet\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein_Daily_Requirements_Activity_Sheet_1.pdf)) activity sheet
- School Lunch Menu

- Highlighters
- Protein Foods List

([https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein\\_Foods\\_List\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein_Foods_List_1.pdf))

### Activity 2: Eggs—Protein MVP

- Protein Lab Demonstration (<https://www.youtube.com/watch?v=kPhuGzDmch0&feature=youtu.be>) video
- Protein Demonstration Lab Sheet  
([https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein\\_Demonstration\\_Lab\\_Sheet.pdf](https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein_Demonstration_Lab_Sheet.pdf))
- Colored pencils
- incredibleegg.org recipes (<https://www.incredibleegg.org/recipe/>)

## Essential Files (maps, charts, pictures, or documents)

- Daily Protein Foods Table  
([https://cdn.agclassroom.org/media/uploads/ip719/Daily\\_Protein\\_Foods\\_Table.png](https://cdn.agclassroom.org/media/uploads/ip719/Daily_Protein_Foods_Table.png))
- Food Match Cards  
([https://cdn.agclassroom.org/media/uploads/2019/08/23/Food\\_Match\\_Cards\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Food_Match_Cards_1.pdf))
- MyPlate Image ([https://cdn.agclassroom.org/media/uploads/ip719/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/ip719/MyPlate_blue.png))
- Protein Daily Requirements Activity Sheet  
([https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein\\_Daily\\_Requirements\\_Activity\\_Sheet\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein_Daily_Requirements_Activity_Sheet_1.pdf))
- Protein Demonstration Lab Sheet  
([https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein\\_Demonstration\\_Lab\\_Sheet.pdf](https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein_Demonstration_Lab_Sheet.pdf))
- Protein Foods List  
([https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein\\_Foods\\_List\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein_Foods_List_1.pdf))

## Vocabulary Words

**antioxidant:** a substance present in foods that can prevent or slow the harmful effects of free radicals in the body

**MyPlate:** nutritional guide published by the United States Department of Agriculture (USDA); icon depicting a place setting with a plate and glass divided into five food groups

**nutrient:** a substance that provides nourishment essential for growth and the maintenance of life

**protein:** an essential nutrient responsible for building tissue, cells, and muscle

**yolk:** the yellow internal part of a bird's egg, which is surrounded by the egg white, is rich in protein and fat, and nourishes the developing embryo if the egg is fertile

## Did You Know? (Ag Facts)

- To tell if an egg is raw or hard-cooked, spin it! If the egg spins easily, it is hard-cooked. If it wobbles, it is raw.<sup>3</sup>
- The color of an egg's yolk is affected by the diet of the hen.<sup>4</sup>
- On average, a hen in a commercial egg production operation lays about 300 eggs a year.<sup>5</sup>

## Background Agricultural Connections

**MyPlate** is the current nutrition guide published by the United States Department of Agriculture (USDA) Center for Nutrition Policy and Promotion. The guide features a color-coded image of a place setting with a plate and glass divided into five food groups. **Protein**, dairy, vegetable, grains, and fruits make up the five food groups. Almost all of the foods found in the five food groups of MyPlate begin on a farm.

The Protein Foods Group includes foods made from meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds. The amount of protein foods you need to eat depends on age, gender, and level of physical activity. In general, 1 ounce of meat, poultry, or fish, 1/4 cup cooked beans, 1 egg, 1 tablespoon of peanut butter, or 1/2 ounce of nuts can be considered to be a 1 ounce-equivalent from the Protein Foods Group. The table below shows the recommended daily amounts.<sup>1</sup>

Daily Recommendation* in Ounce-Equivalents (oz-equiv)		
<b>Toddlers</b>	12 to 23 months	2 oz-equiv
<b>Children</b>	2-4 yrs	2 to 5 oz-equiv
	5-8 yrs	3 to 5½ oz-equiv
<b>Girls</b>	9-13 yrs	4 to 6 oz-equiv
	14-18 yrs	5 to 6½ oz-equiv
<b>Boys</b>	9-13 yrs	5 to 6½ oz-equiv
	14-18 yrs	5½ to 7 oz-equiv
<b>Women</b>	19-30 yrs	5 to 6½ oz-equiv
	31-59 yrs	5 to 6 oz-equiv
	60+ yrs	5 to 6 oz-equiv
<b>Men</b>	19-30 yrs	6½ to 7 oz-equiv
	31-59 yrs	6 to 7 oz-equiv
	60+ yrs	5½ to 6½ oz-equiv

Proteins are important building blocks for bones, muscles, cartilage, skin, and blood. Protein foods contain B vitamins, vitamin E, iron, zinc, and magnesium. B vitamins help the body release energy, aid with the function of the nervous system, and assist with the formation of red blood cells and the building of tissues. Vitamin E functions mainly as an **antioxidant** that helps protect cells from damage. Iron carries oxygen in the blood. Zinc helps with the proper function of the immune system and is necessary for biochemical reactions. Magnesium builds bones and releases energy from muscles.

Eggs, a part of the Protein Foods Group, can help meet a variety of **nutrient** needs across the lifespan. Eggs are a good or excellent source of eight essential nutrients including protein and choline. Choline is an under-consumed nutrient the Dietary Guidelines recommend to support brain health. Eggs are one of the few natural food sources of vitamin D, which along with calcium, helps support growing bones. The **yolk**, the yellow part of the egg, contains about half of the egg's protein. While egg whites contain some of an egg's high-quality protein, riboflavin and selenium,



the majority of an egg's nutrient package is found in the yolk, including vitamin D, choline, lutein, and zeaxanthin. At 15¢ per serving, eggs are the least expensive source of high-quality protein.<sup>2</sup>

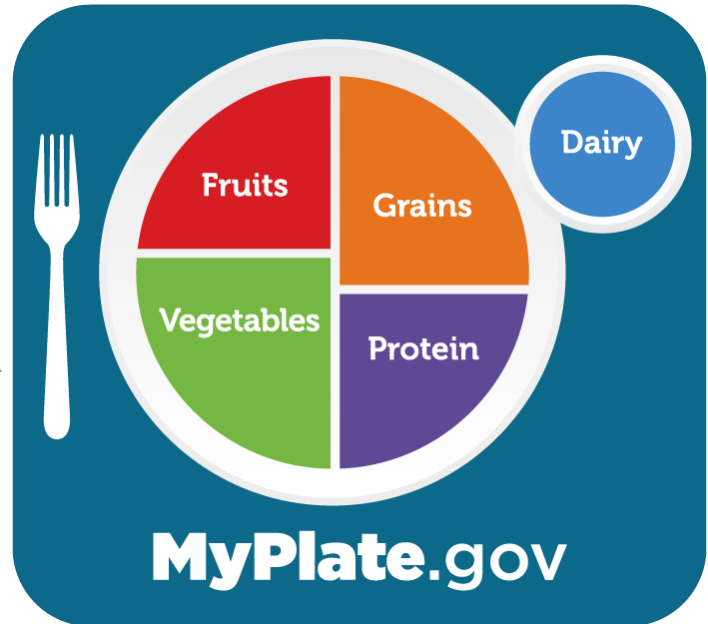
## Interest Approach - Engagement

1. Provide each student with a Food Match Card

([https://cdn.agclassroom.org/media/uploads/2019/08/23/Food\\_Match\\_Cards\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Food_Match_Cards_1.pdf)).

2. Ask the students to go around the room and find the person who has a match to their card. The cards are a match when the food card pairs with the plant or animal the food comes from.

3. Show the students the MyPlate Activity Poster or project the MyPlate Image ([https://cdn.agclassroom.org/media/uploads/ip719/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/ip719/MyPlate_blue.png)) onto a large screen. Point out that each different colored section of MyPlate represents one of the five food groups.



4. Tell the students that all of the foods on the cards have something in common.

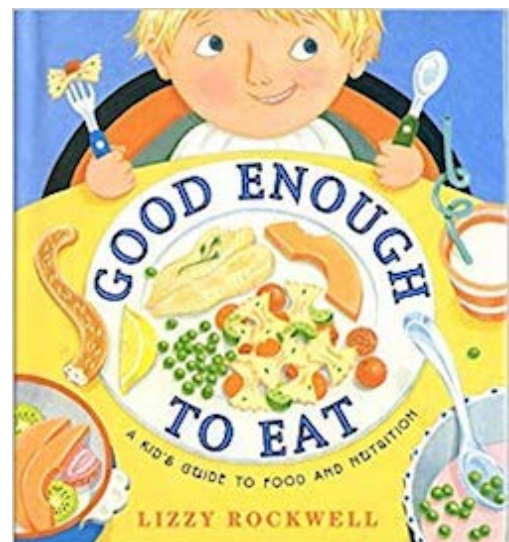
They all belong to the same food group. Ask the students, "In which food group do these foods belong?" (*The Protein Foods Group*.)

5. Explain to the students that they are going to investigate the Protein Foods Group.

## Procedures

### Activity 1: The Importance of Protein

1. Read the book *Good Enough to Eat: A Kid's Guide to Food and Nutrition* by Lizzy Rockwell.
2. Show the students the MyPlate Activity Poster or project the MyPlate Image ([https://cdn.agclassroom.org/media/uploads/ip719/MyPlate\\_blue.png](https://cdn.agclassroom.org/media/uploads/ip719/MyPlate_blue.png)) onto a large screen. Point out the purple "Protein" section. Ask the students, "Why is protein important?" Reread the section of the book about protein.
3. Ask the students to name foods that belong in the Protein Foods Group. Make a list of the foods the students name on the board.

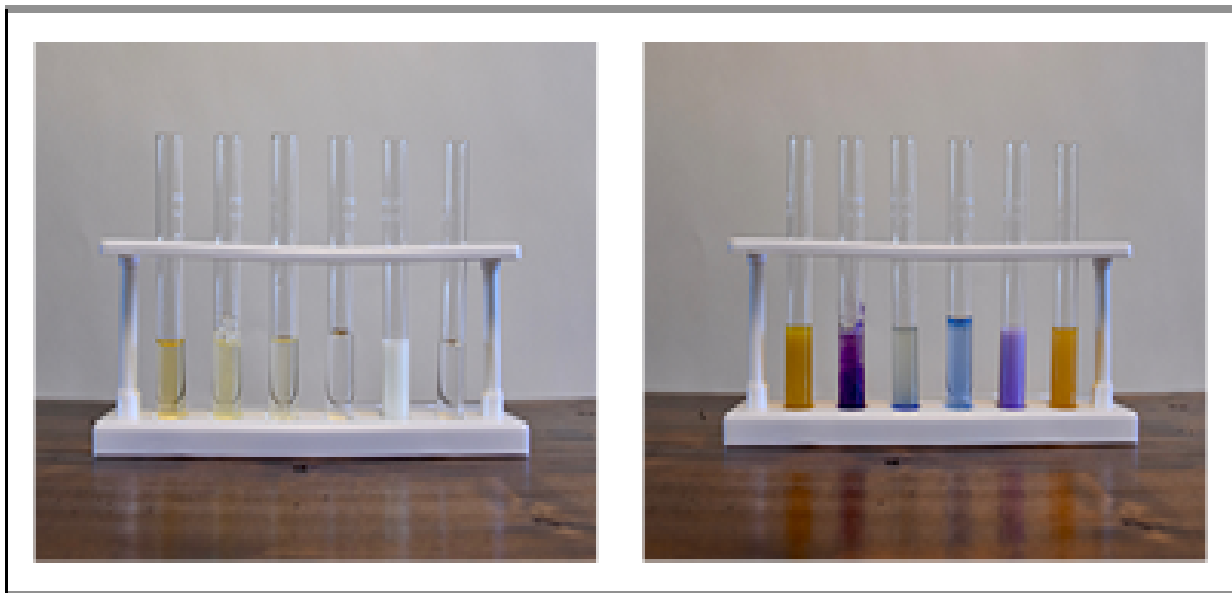


4. Provide each student with a highlighter and a school breakfast and/or lunch menu. Study the menu. As a class, identify and highlight the foods from the Protein Foods Group. Add any new foods to the list on the board.
5. Pass out the Protein Daily Requirements ([https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein\\_Daily\\_Requirements\\_Activity\\_Sheet\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/25/Protein_Daily_Requirements_Activity_Sheet_1.pdf)) activity sheet. Project the Daily Protein Foods Table ([https://cdn.agclassroom.org/media/uploads/ip719/Daily\\_Protein\\_Foods\\_Table.png](https://cdn.agclassroom.org/media/uploads/ip719/Daily_Protein_Foods_Table.png)) onto a large screen. Ask the students to use the chart to identify the amount of protein they should eat each day and record the amount on their activity sheet.
6. Provide the students with Food Model Cards from the protein group or refer to the Protein Foods List ([https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein\\_Foods\\_List\\_1.pdf](https://cdn.agclassroom.org/media/uploads/2019/08/23/Protein_Foods_List_1.pdf)). Instruct the students to identify foods they could eat for one day's breakfast, lunch, and dinner that would meet their daily requirements for protein. Have them fill out the *Protein Daily Requirements* activity sheet with their choices.

## Activity 2: Eggs—Protein MVP

**Teacher Note:** Due to the precautions that need to be taken when working with Biuret reagent, a lab demonstration video has been provided. It is not recommended to use this chemical in an elementary classroom.

1. Pass out a Protein Demonstration Lab Sheet ([https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein\\_Demonstration\\_Lab\\_Sheet.pdf](https://cdn.agclassroom.org/media/uploads/2019/09/11/Protein_Demonstration_Lab_Sheet.pdf)) to each student.
2. Explain to the students that they will be watching a video lab demonstration that tests six different samples for the presence of protein—apple juice, egg white, cooking oil, water, milk, and lemon-lime soda.
3. Biuret reagent is a chemical used to detect the presence of proteins. If proteins are present, the solution will turn purple. Ask the students to predict which sample(s) they think will contain protein on their lab sheet.
4. View the Protein Lab Demonstration (<https://www.youtube.com/watch?v=kPhuGzDmch0&feature=youtu.be>) video, pausing when indicated to record observations.
5. At minute :35, pause the video and have the students record which sample is in each test tube and use colored pencils to record their observations of each test tube on their lab sheets.
6. At minute 1:48, pause the video and have the students use colored pencils to record their observations of what each test tube looks like after the Biuret reagent is added.
7. Ask the students, "Which sample(s) contain protein? Were your predictions correct?"



8. Explain to the students that eggs are a naturally nutrient-rich food, containing eight essential nutrients, including protein. Eggs are a high-quality complete protein. One egg contains 6 grams of high-quality protein and all nine essential amino acids for only 70 calories.
9. Ask the students to create a nutritional meal plan that features eggs. Visit the recipes at [incredibleegg.org](https://www.incredibleegg.org/recipe/) (<https://www.incredibleegg.org/recipe/>) for inspiration.

### Concept Elaboration and Evaluation

After conducting these activities, review and summarize the following key concepts:

- The Protein Foods Group includes foods made from meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds.
- Proteins are important building blocks for bones, muscles, cartilage, skin, and blood.
- Eggs are a nutritious food and a good source of protein.

## Enriching Activities

- Complete the GrowingGreat: Powerful Proteins ([https://www.delmonte.com/sites/default/files/pdf/2020-08/Powerful\\_Proteins\\_Lesson.pdf](https://www.delmonte.com/sites/default/files/pdf/2020-08/Powerful_Proteins_Lesson.pdf)) activity.

## Sources

1. <https://www.myplate.gov/eat-healthy/protein-foods> (<https://www.myplate.gov/eat-healthy/protein-foods>)
2. <https://www.eggnutritioncenter.org/downloads/toolkits/Protein-Fact-Sheet.pdf> (<https://www.eggnutritioncenter.org/downloads/toolkits/Protein-Fact-Sheet.pdf>)
3. <https://thinkegg.com/index.php/21-2/>
4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6470839/> (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6470839/>)

5. <https://extension.psu.edu/modern-egg-industry> (<https://extension.psu.edu/modern-egg-industry>)

## Suggested Companion Resources

- Chickens on the Farm (<https://iowamatrix.agclassroom.org/matrix/resource/610/>)
- Chicks & Chickens (<https://iowamatrix.agclassroom.org/matrix/resource/237/>)
- Food (<https://iowamatrix.agclassroom.org/matrix/resource/274/>)
- Good Enough to Eat: A Kid's Guide to Food and Nutrition (<https://iowamatrix.agclassroom.org/matrix/resource/998/>)
- Parent/Offspring Cards (<https://iowamatrix.agclassroom.org/matrix/resource/799/>)
- Eggs 101: An Egg's Journey from the Farm to Our Tables (<https://iowamatrix.agclassroom.org/matrix/resource/779/>)
- Virtual Egg Farm Field Trips (<https://iowamatrix.agclassroom.org/matrix/resource/780/>)
- Nutrition Posters (<https://iowamatrix.agclassroom.org/matrix/resource/1007/>)
- Eggs in Schools (<https://iowamatrix.agclassroom.org/matrix/resource/1065/>)

## Author

Lynn Wallin

## Organization Affiliation

National Center for Agricultural Literacy

*Powered by the National Agricultural Literacy Curriculum Matrix ([agclassroom.org](https://iowamatrix.agclassroom.org))*