Grains

*Lesson Plan for Grade 1, Science*

*Prepared by NAITC*

*Modified by Mississippi State University, School of Human Science*

*for Mississippi Farm Bureau Federation - AITC*

# OVERVIEW & PURPOSE

In this lesson students will use the story *The Little Red Hen* to learn about wheat production and bread making.

# EDUCATIONAL STANDARDS

**Mississippi College-and-Career Readiness Standards:**

L.1.3A Students will demonstrate an understanding of what plants need from the environment for growth and repair.

L.1.3A.1 Conduct structured investigations to make and test predictions about what plants need to live, grow, and repair including water, nutrients, sunlight, and space. Develop explanations, compare results, and report findings.

ELA-RI.1.9 Identify basic similarities in and differences between two texts on the same topic.

**NALOs:**

T2.K-2 a Explain how farmers/ranchers work with the life cycle of plants and animals (planting/breeding) to harvest a crop

# OBJECTIVES

* Students will analyze how bread is made
* Students will observe the stages of the life cycle of wheat

# MATERIALS NEEDED

Activity 1:

* *The Little Red Hen* story
* 2 containers of wheat seeds
* Wheat stems (Wheat stems can be obtained from a local farmer or show picture of wheat)
* Loaf of wheat bread
* Paper plates (1 per student)
* Popsicle sticks (1 per student)
* Art supplies (tissue paper, construction paper, chenille stems, feathers, etc.)

Activity 2:

* Clear plastic cups, 1 per student
* Permanent markers (1 per student)
* Potting soil (1 large bag)
* Small gardening trowels or spoons
* Wheat seeds (hard red wheat seeds can be purchased from the grocery store)
* Water spray bottles
* [Little Red Hen Story](https://drive.google.com/file/d/1jTDELAyCY4b3I99t_M2w08-Yz-SQdOHU/view?usp=sharing)

# Lesson Set Up:

Activity 1:

1. Gather the wheat seeds, stalks (or photos of stalks), and bread.
2. Create signs that read first, next, then, and finally (***First****, the little red hen planted the seeds.* ***Next****, she harvested the wheat.* ***Then****, she took the wheat kernels to the mill to be ground into flour.* ***Finally****, she used the flour to make bread.*)
3. Set out supplies for the puppet show activity.
4. Predetermine students into groups of 4.

Activity 2:

1. Set out cups, markers, soil, spoons, seeds, and water spray bottles for the students to use.
2. Clear a space by some windows to set the planted wheat seeds.

# VOCABULARY

**chaff:** the debris that is separated from the seed when grain is threshed

**combine:** a machine that cuts crops (such as corn or wheat) and separates the seeds of the plant from the rest of the plant

**forage:** grasses and other plants that are eaten by animals (such as livestock)

**thresh:** to separate the seeds of crops like wheat, corn, or dry beans from the plant

**wheat:** a widely cultivated grain that grows in tight clusters on tall stalks and which is typically ground into flour to be used in breads, baked goods, and pasta

**winnow:** to remove (the unwanted coverings of seeds) from grain using a current of air

# Ag Facts:

* Wheat is a member of the grass family that produces a dry, one-seeded fruit commonly called a kernel.
* One bushel of wheat contains approximately one million individual kernels.
* In the United States, one acre of wheat yields an average of 40 bushels of wheat.
* Kansas is the number one state in flour milling (grinding the seeds into flour) in the United States.

# Background information for the teacher:

**Wheat** is a type of grain. It is useful as a livestock feed, but most wheat is used as human food. It is nutritious, easily stored and transported, and easily processed into a variety of foods. Unlike any other plant-derived food, wheat contains gluten protein that causes leavened dough to rise, forming very small gas cells that hold carbon dioxide during fermentation. This gluten and fermentation process produces light-textured bread. Bread and other wheat products are high in carbohydrates and contain valuable protein, minerals, and vitamins.

Types of wheat are grouped based on the season in which they are planted and whether their grain is hard or soft, red or white.The five major types of wheat grown in the United States are: hard red winter, hard red spring, soft red winter, white, and durum. Hard-red winter wheat and hard-red spring wheat are the most popular types of wheat in the United States. This wheat is ground into flour that is used for making bread. Another class of wheat, durum wheat, is used in macaroni, spaghetti, and other pasta products. Soft-red winter and soft-white wheats are grown in the eastern part of the United States. These types of wheat have less protein. They are used to make flour for cakes, biscuits, pastries, and other breakfast foods.

To prepare the soil for planting wheat, a farmer drives a tractor that pulls a plow through the fields. The plow turns the soil over and kills the weeds. A disk harrow is then connected to the tractor. The disk harrow breaks the soil down into smaller pieces. When the soil is ready for planting, the farmer uses a grain drill to plant the wheat seeds.

Spring wheat is planted in April or May and harvested in August or September. Winter wheat is planted in August, September, or October. It begins to grow, goes dormant in the winter, and then continues to grow once the snow melts and the soil warms in the spring. Winter wheat is harvested in May, June, and July.

The wheat we eat comes from the seeds of the wheat plant. To harvest the seeds, the wheat must be cut, **threshed**, and **winnowed**. A large machine, called a **combine**, is used to cut the wheat plant and separate the seeds (the grain) from the stem and the protective outer hull. The action of shaking the seeds loose is called threshing. Winnowingseparates the seeds from the rest of the plant. The grain is collected, and the rest of the plant, referred to as the **chaff**, is used for animal bedding or **forage**. A combine is a very expensive piece of equipment, so many wheat farmers hire a custom harvester. Custom harvesters take their combines across the country during the wheat harvest, going from farm to farm cutting wheat.

Once the wheat seeds are harvested, they are loaded into trucks and driven to grain elevators where they are weighed, tested, and stored. The wheat seeds are then transported to a mill to be ground into flour.

# LEARNING PROCEDURES

1. Show the class stalks of wheat, wheat seeds, and flour. Ask if they can identify each item and how the items are related.
2. Explain that each item represents a step in the process of making flour. Wheat grows in a field and produces tiny seeds. The seeds are then removed and ground into flour.
3. Ask the students to list some of the foods that can be made using flour. *(bread, cake, cookies, brownies, pasta, crackers, etc.)*

Activity 1: Story of the Little Red Hen

1. Read *The Little Red Hen* to the students.
2. Place the wheat seeds, wheat stems, flour, and a loaf of bread in random order on a table for the students to see. Discuss the steps the little red hen followed to make her bread.
3. Have the class help create a timeline of the story by placing the props in the correct order. Use the words **first**, **next**, **then**, and **finally** to review the story. (***First****, the little red hen planted the seeds.* ***Next****, she harvested the wheat.* ***Then****, she took the wheat kernels to the mill to be ground into flour.* ***Finally****, she used the flour to make bread.*)



1. Place students in groups of four. Assign each student in the group a different character from *The Little Red Hen*. Have them create a paper plate puppet for their character to be used in a puppet show retelling of the story.
2. Allow time for each group to practice and perform their puppet show retelling the story for the class.

Activity 2: Growing Wheat

1. Ask the students, **"Who grows the wheat that is ground into flour and sold at the grocery store?"** (*farmers)* Explain to the students that while the little red hen probably grew a small patch of wheat, most wheat farmers grow large amounts of wheat in big fields.
2. Explain that wheat is a plant. Ask the students, "**What do plants need to grow?"** (*Plants need light, water, air, and nutrients to grow.*)
3. Tell the students that, just like the little red hen, they will grow a small patch of wheat to better understand how farmers must meet the needs of plants when growing crops.
4. Provide students with clear plastic cups, permanent markers, a container of potting soil with small gardening trowels or spoons for scooping, and wheat seeds. Instruct them to write their name on a cup and add potting soil until the cup is 3/4 full. They should put about 15 wheat seeds on top of the soil.

Encourage the students to place about 5 seeds around the sides of the cup to allow for observation of the germination process and root growth. Add a thin layer of soil on top of the seeds.

1. Remind students that plants need light, water, air, and nutrients to grow. Ask the students, **"How can we help the wheat plants get what they need?** (*We can put the cups by the window for light from the sun. We can water the plants. The plants will get nutrients from the soil and air from the classroom.*)
2. Show the students a cup of dry soil, a cup of soil with too much water, and a cup of soil with the right amount of water. Explain to the students that plants need water, but too much water can be harmful. They will need to check the soil in their cups every day and add more water when the soil begins to dry. Provide the students with water spray bottles and instruct them to spray the soil with water before placing their cups by a window. It will take 3-5 days for the wheat seeds to sprout.
3. After the wheat begins to grow, ask students the following questions:
   * **How many days did it take for the wheat seeds to sprout?**
   * **What do the wheat plants look like?**
   * **What do plants need to grow?**

**Concept Elaboration and Evaluation**

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

* Wheat is grown by farmers.
* After wheat is harvested, it is ground into flour. Flour is used to make many different food products.
* Farmers use different tools and machinery to make their work easier. The combine is a machine used to harvest wheat.

# Additional Learning Procedures

To help students review and elaborate more about grains, complete a [“I used to think… now I think…”](https://drive.google.com/file/d/1Mu_7NpzCFC03q5sxawjfOFqnQbrTT6GA/view?usp=sharing) chart and share with other students.

To promote students to make further connections about grains after the lesson is complete try reading the book [“Ten Seeds” By: Ruth Brown.](https://www.amazon.com/Ten-Seeds-Ruth-Brown/dp/184939251X/ref=asc_df_184939251X/?tag=hyprod-20&linkCode=df0&hvadid=312674805003&hvpos=&hvnetw=g&hvrand=642611665018542004&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1020785&hvtargid=pla-466874682948&psc=1&tag=&ref=&adgrpid=65038952147&hvpone=&hvptwo=&hvadid=312674805003&hvpos=&hvnetw=g&hvrand=642611665018542004&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1020785&hvtargid=pla-466874682948)

Additional Texts to Include:

[Grains on MyPlate](https://www.agfoundation.org/recommended-pubs/grains-on-myplate)

[Glorious Grasses, The Grains](https://www.agfoundation.org/recommended-pubs/glorious-grasses-the-grains)

[The New Food Guide Pyramid, Grains](https://www.agfoundation.org/recommended-pubs/the-new-food-guide-pyramid-grains)



Source: <https://www.agclassroom.org/teacher/matrix/>

*For more information and additional lessons visit*

*https://msfb.org/ag-in-the-classroom/lesson-plans/.*