

The Story of Wheat

OVERVIEW: How many of your students really understand that all the things they eat made from flour – bread, pizza dough, cake, cookies, crackers, rolls – actually come from a plant? In this lesson, students learn about the parts of the wheat plant and its seed. Then they plant wheat seeds to observe how the plant grows.



GRADES: 3-5

OBJECTIVES: The student will be able to:

- Identify wheat as the plant that is the source of much of the flour we eat.
- Identify the parts of the wheat plant.
- Identify the parts of the wheat seed.
- Demonstrate how to plant a wheat seed.

MATERIALS:

The NJAITC powerpoint presentation *The Story of Wheat* available to download at our website <https://newjersey.agclassroom.org> under NJAITC Lessons, NJ Ag in a Box, Wheat.

The Story of Wheat question worksheet for each student

Wheat seeds (at least one per student)

Potting soil

Container for planting seeds Any small plastic container such as a yogurt carton or berry container will work. Poke holes in the bottom of the container if there are none.

VOCABULARY

Kernel – another word for the wheat seed

Bran – the hard outer covering of the wheat seed

Germ – The baby plant – or *embryo*- inside the wheat seed

Endosperm – the food supply for the *embryo* to use until it can grow leaves and make food on its own through photosynthesis

Photosynthesis -is the process in which green plants use sunlight, water, and carbon dioxide in the air to make their own food. Plants use energy from light to create a type of sugar for food and release fresh oxygen into the air for us to breathe.

Mill – to grind something into powder or a place where this is done

Combine – a large farm machine that combines three big jobs: it cuts down the plants, shakes out the seeds, and cleans away the leftover leaves and stems.

Bushel – a measurement used for fruit, vegetables, and grain that is equal to about 9 gallons of a liquid

INTRODUCTION:

Ask your students to brainstorm a list of food they eat that is made from flour. Make a list of their suggestions. Ask students if they know where this flour comes from. Explain that today they will learn how wheat is grown and milled into flour, and then they will plant some wheat seeds.

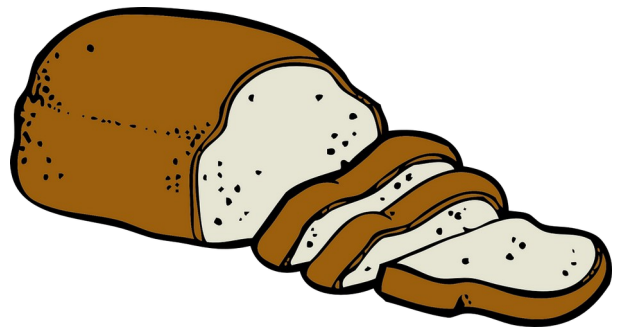
PROCEDURE:

Learn about wheat farming

Review the parts of plant – ask students what the parts are and what they do for the plant. Ask students if they know what photosynthesis is. Briefly explain or review this. Ask students if they know the parts of a seed. If they do not, tell them they will soon learn them.

Tell students they are going to see a slideshow about wheat. Ask them to listen for the answers to the questions on *The Story of Wheat* worksheet and write down their answers or take notes they can use for answers afterward. After the slideshow, give the students a few minutes to complete their worksheets.

Discuss the powerpoint presentation and the answers to the worksheet questions. Ask students if they wrote down any questions they had about the slide presentation and discuss answers.



Plant wheat seeds

Divide students into small groups and distribute at least one wheat seed per reach student. Ask students to feel the seed and describe the outside – it is hard.

Demonstrate how to plant the wheat seeds to the whole class. Use any container – milk or yogurt carton, berry container, plant pot, etc. – but make sure the container has drainage holes in the bottom. Poke holes in the bottom if there are none.

Fill the container with potting soil. Ask students in their small groups to place their wheat seeds on top of the soil so they are spaced out and not touching. Cover the seeds lightly with soil, about ¼-inch deep. Moisten the soil – a spray bottle is easy to use.

Place the container in a sunny area, and check the moisture level of the soil frequently so the seeds don't dry out. Water lightly when needed. The sprouts should be visible within a week. Allow your students to observe the growth of the wheat seeds for at least a month. They can record their observations in science journals.

EVALUATION:

Completed *The Story of Wheat* question worksheet

Students write a paragraph describing how the wheat seed grew into a plant.

EXTENSIONS:

Ask students to research and show on a map the states that are the biggest wheat producers.

Ask students to research and show on a map the countries that are the biggest wheat producers.

Ask students to research the history of wheat farming and flour milling.

Make Bread in a Bag or Wheat Grass Smoothies (see recipes below).

New Jersey Learning Standards

Science: 3:LS1.B 4:LS1.A 5:LS2.A

Social Studies: 3-5: 6.1.5.GeoHE.2, 6.1.5.EconEM.1, 2

English Language Arts: 3:RI.3.1,2,4 4:RI.4.1,2,4 5:RI.5.1,2,4

Name_____

The Story of Wheat

Listen for the answers to these questions in the slide presentation:

What part of the wheat seeds do we eat?_____

What are the three parts of a wheat seed and what does each part do?

1.

2.

3.

Why is the germ removed from the seed at the mill?

Why is the bran removed from the seed at the mill?

How is white bread different from whole wheat bread?

What machine is used to harvest wheat?_____

Is wheat a big crop in New Jersey?_____

Although many things we eat are made of wheat flour, there are other types of flour. Do you know any?_____

If there is anything from the slide presentation you have a question about, write your question here.

Name_____

The Story of Wheat *answer key*

Listen for the answers to these questions in the slide presentation:

What part of the wheat seeds do we eat? seeds

What are the three parts of a wheat seed and what does each part do?

- 1. Bran – the hard outer covering of the wheat seed*
- 2. Germ – The baby plant – or embryo- inside the wheat seed*
- 3. Endosperm – the food supply for the embryo to use until it can grow leaves and make food on its own through photosynthesis*

Why is the germ removed from the seed at the mill?

The germ is removed because its fat content limits the flour's shelf-life.

Why is the bran removed from the seed at the mill?

The bran is removed to give the flour its white color and fluffy texture.

How is whole wheat bread different from white bread?

Whole wheat bread is made from all three parts of the wheat seed.

What machine is used to harvest wheat? combine

Is wheat a big crop in New Jersey? No

Although many things we eat are made of wheat flour, there are other types of flour. Do you know any? Corn, rice, oats, potato, almond, rye, and barley are some.

If there is anything from the slide presentation you have a question about, write your question here.

Bread in a Bag Recipe

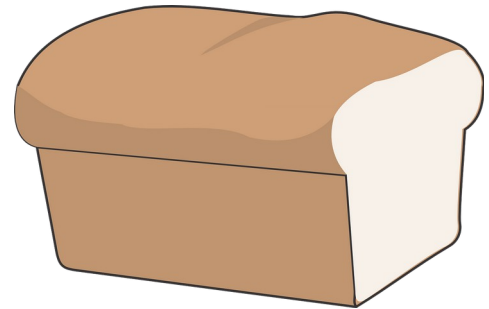
Ingredients and Materials for each loaf

½ cup all-purpose flour	plastic wrap
2 cups whole wheat flour	cooking oil spray
warm water	heavy duty ziplock bags
2 tablespoons sugar	food handling gloves
1 package yeast (2 1/4 teaspoons) <i>Quick-rise yeast will speed the process</i>	various measuring cups and spoons
1 teaspoon salt	cookie sheets
1 tablespoon vegetable oil	

Directions

In a one-gallon heavy-duty ziplock bag, mix:

- ½ cup all-purpose flour
- 1 package or 2 ¼ teaspoons yeast
- ½ cup warm water
- 2 tablespoons sugar.



Close the bag and knead it with fingers until the ingredients are completely blended. Leave the bag closed, with the contents in a corner, and let it rest 10 minutes. You can eliminate this wait by using instant yeast.

Then add:

- 2 cups whole wheat flour
- ¾ cup warm water
- 1 teaspoon salt
- 1 tablespoon vegetable oil

Close the bag and knead it. (You may need to remove some air from the bag.) Add more flour until dough no longer sticks to the bag.

Spray the students' hands or their food handler gloves with oil so there will be no sticking. Open the bag and allow the dough to fall out onto clean or gloved hands.

Form the dough into a loaf and place it onto cookie sheet. Remember the dough will grow 1-1/2 times larger, so leave space between loaves. Cover the loaves with sprayed plastic wrap and allow them to rise: 30 minutes for quick-rise yeast and 45 minutes for regular yeast.

Bake for 30-35 minutes in a 350 degree oven.

Wheatgrass Smoothies

Young wheatgrass sprouts can be used to make smoothies. Wheatgrass can be bitter, however, so if you want your students to try it, be sure to combine it with something sweet. Here is a sample recipe:

*2 cups of wheatgrass. Plain wheatgrass chops up well in a blender.
1 cup of your favorite frozen fruit, or if raw fruit is used - include 1 cup of ice
1 carrot
1 Tbs. lemon juice
1 Tbs. agave or other sweetener
Add up to 1/2 cup cold water to adjust consistency.*

Notes: Apples and carrots go great with wheatgrass! If using raw apples, use 2 cups raw apples plus one cup apple or other fruit juice.

