



# WHOLE GRAINS: WHEAT

## What is It?

- When all parts of the grain seed are kept intact, it's called a whole grain. Refined grains are just the endosperm, with the bran and germ removed. Whole wheat is a type of whole grain.
- Washington state ranks fourth in the nation in wheat production.
- About 2.24 million acres of wheat were harvested in Eastern Washington in 2024. One football field is about an acre in size—that's over 2 million football fields of wheat!
- Washington grows four classes of wheat, each with slightly different nutrient makeup and texture: Soft White, Club, Hard Red Spring, and Hard Red Winter.
- In 1844, a black pioneer named George Bush was one of the first people to farm wheat in the pacific northwest. Bush was well known for his generosity, sharing wheat from his crops as both food and seed to help neighboring farmers get through difficult times.



Wheat fields in Walla Walla, credit: WSDA





## Make It

Be sure to follow local Food Safety rules and regulations. Learn more here: [Food Safety Rules and Regulations | Washington State Department of Health](#).

Recipe: Wheat Berry Fruit Salad  
Yield: 16 sample servings (1/4 cup)

Ingredients	Directions
<p><b>Salad</b></p> <ul style="list-style-type: none"> <li>• 1 cup wheat berries, cooked</li> <li>• 1 cup peaches, chopped</li> <li>• 1 cup blueberries</li> <li>• 1 cup strawberries, sliced</li> </ul> <p><b>Dressing</b></p> <ul style="list-style-type: none"> <li>• juice of 1 lime (2 tablespoons)</li> <li>• 2 tablespoons olive oil</li> <li>• 1 teaspoon djon mustard</li> <li>• 1–2 tablespoons honey</li> <li>• salt and pepper to taste</li> </ul>	<ol style="list-style-type: none"> <li>1. In a large bowl, add all chopped fruits and wheat berries. Set aside.</li> <li>2. In a small bowl, whisk together all dressing ingredients until well mixed.</li> <li>3. Add dressing to large bowl and gently toss to coat.</li> <li>4. Serve cold or at room temperature.</li> </ol>

### Notes

- Feel free to experiment with whatever fruits you have on hand.

Recipe adapted from [Prairie Californian](#).

Explore interactive taste test resources to encourage participants to try what you made!  
[Taste-Testing Event Resources](#)



## What Makes a Whole Grain?

### Learn It

#### Elementary school

#### Objectives

This lesson presents the difference between refined and whole grain products and ways to identify wheat seed parts and functions. Students should be able to:

- Describe the difference between refined grains and whole grains.
- Know the importance of eating whole grain foods and identify examples of them.
- Identify the three parts of a wheat kernel and their function.

#### Materials

- A stalk of wheat or an entire wheat plant
- Flour in small container and other grain products (couscous, which is a tiny pasta made from wheat, bulgur wheat, wheat germ, etc.) in individual containers to demonstrate varying levels of processing.
- Wheat berries (whole)
- “How It’s Made: Flour” video (5 min): <https://www.youtube.com/watch?v=kFP-KBPwn3E>
- Wheat kernel diagram that shows bran, germ, and endosperm.
- Printed or written slips for parts of kernel (one of each) reading:
  - I am the germ. I contain vitamins, protein, minerals and healthy fats. I help give you energy!
  - I am the endosperm. I contain starchy carbohydrates and proteins!
  - I am the bran. I contain fiber and B vitamins. I help you stay full and give you energy!
- Props for parts of kernel:
  - Apple
  - Jacket or blanket

#### Directions

Show students the wheat plant and ask them if they know what it is.

- Ask them to name foods that are made of wheat and other grains such as oats, barley, and corn.
- Then ask the students to identify the food group these types of foods are in (grain group) and what key nutrient is found in the grain group (carbohydrates). Point out that protein is also found in grains.
- Pass around the samples of wheat berries (kernels), flour, and/or other wheat products.

Explain the process of planting, growing, harvesting, and milling grain to make flour, or show the “How It’s Made: Flour” video: <https://www.youtube.com/watch?v=kFP-KBPwn3E>

Show wheat kernel diagram on projector or pass out copies. Point out the three plant parts.





## What Makes a Whole Grain?

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#### Directions

Ask for three student volunteers to be kernel parts (one needs to be wearing running shoes). Tell the students we are going to “meet” the three parts of a grain:

- Introduce Germ (a very energetic student, wearing running shoes) and have students say “Hi germ!” The germ is wearing running shoes because they are going to sprout into a new plant. Have the germ volunteer read the germ lines listed in materials section.
- Hand the second student volunteer an apple and ask them to stand next to the germ. Introduce endosperm and have students say “Hi endosperm!” Explain that endosperm is holding an apple because they are the germ’s food supply. Have the endosperm volunteer read the endosperm lines listed in materials section.
- Hand the third student volunteer the blanket (or jacket) and ask them to stand behind germ and endosperm with arms outstretched holding the blanket around/over the other two. Introduce bran and have students say “Hi bran!” Explain that the bran protects rest of seed from sunlight, pests, water and disease. Have the bran volunteer read the bran lines listed in materials section.
- Thank the volunteers and have the other students cheer for them while they return to their seats.

Ask students to describe the difference between whole wheat/whole grain and refined or enriched flour. Explain when all three parts (the whole kernel) are milled together it makes whole wheat (aka whole grain) flour. If just the endosperm is used, then it makes white flour.

Ask students how whole wheat flour is different nutritionally than white flour, and which is better for our bodies. Whole wheat is a better choice because it contains the fiber (from the bran) and larger amounts of naturally occurring vitamins and minerals. Whole grains are recommended for good health. Point out that white bread is often “enriched” which means manufacturers add back the nutrients lost in the milling (as shown in the video right before the flour is bagged). Encourage students to select whole grain sources for at least half of the grains eaten per day.





## What Makes a Whole Grain?

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#### Directions

Close the lesson by reinforcing the importance of enjoying whole grains. As a class, brainstorm a list of whole grains food items that they can enjoy today at lunch, for an afternoon snack, or at dinner. Write these on the board. If the school menu is available, point out the whole grains served on it. Ask students what kind of bread they will choose the next time they eat a sandwich.

Adapted from: Montana Harvest of the Month, Lesson 6: Whole Grains, created by Nicki Jimenez, FoodCorps Member and Whole Grains Lesson, Eat Smart, Be Smart curriculum. [Grains Classroom Bites](#).



Wheat country, credit: WSDA





## Eat It

Wheat that still has the entire grain kernel intact is called whole wheat. Whole wheat is rich in fiber, which is important for maintaining a healthy heart and digestive system and regulating blood sugar. It also includes B Vitamins, which help our cells grow and stay healthy, and a variety of minerals and antioxidants.

When wheat is processed to make white flour, the fibrous bran layer and nutrient-rich germ are removed, leaving just the endosperm, which is made up of carbohydrates. Most of the grain's nutrients are lost in this process. Since flour is a staple food in many United States households, white flour is enriched with essential nutrients including iron, vitamins B1 (thiamine), B2 (riboflavin), B3 (niacin), and B9 (folic acid), to help ensure people are receiving essential nutrients.

However, enrichment doesn't replace all nutrients affected by processing, including protein, essential fatty acids, various minerals, vitamin E, and antioxidants. It is still recommended that at least half of all grain products consumed each day are whole grains, which are naturally nutrient-dense. Gluten is found in the endosperm of wheat and contributes to the stretchy texture and fluffy quality of bread by capturing gasses released by yeast or other leavening agents. While some individuals may have Celiac Disease, a wheat allergy, or gluten sensitivity, most people are able to eat gluten without issue.

## Read It

- Bread, Bread, Bread, by Ann Morris
- The Wheat We Eat, by Allan Fowler
- Pancakes, Pancakes!, by Eric Carle
- The Little Red Hen, by Paul Galdone
- Everybody Bakes Bread, by Norah Dooley

## More About It

Find additional learning resources about peas and beans for different age groups below.

- Read the inspiring story of Washington State's first permanent wheat farmer, George Bush, here: [George Bush — Washington Wheat Foundation](#)
- Elementary School Lesson Plans & Educational Materials (K–5th) | [The Whole Grains Council](#)
- Lesson for Grades 3rd–5th [Wheat and Dolls – Curriculum Matrix](#) | [Washington Agriculture in the Classroom](#)
- Lesson for Grades 3rd–5th [Enjoying the Harvest – Curriculum Matrix](#) | [Washington Agriculture in the Classroom](#)
- Lesson for Grades 6th–8th [Wheat: Ancient and Ageless – Curriculum Matrix](#) | [Washington Agriculture in the Classroom](#)
- Lesson for Grades 9th–12th [Growing a Nation Era 3: Prosperity and Challenges – Curriculum Matrix](#) | [Washington Agriculture in the Classroom](#)