



# STEMsational Ag: The Virtual Farm

MIDDLE TENNESSEE STATE UNIVERSITY



## Module 1: Cereal - Thinking Outside the Box UNIT 2: COOKING WITH WHOLE GRAINS Grades 9 - 12



National Institute of Food and Agriculture  
U.S. DEPARTMENT OF AGRICULTURE



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## STEMsational Ag—The Virtual Farm

### Welcome to Module 1 Unit 2: Cooking with Whole Grains



#### Introduction:

In this unit, learn how to identify whole versus refined grains, as well as several fun ways to prepare them.

#### Pre-assessment:

- Before checking out the Whole Grain Council Calendar (i.e., next bullet), list 3 facts that you know about grains.
- Check out the Whole Grain Council's Grain of the Month Calendar.
- Choose one of the grains with which you are most familiar like corn, rice, wheat, oats, barley, or quinoa
- Write down at least one fact you already know about it.
- Learn more about the grain you chose
- Then, click "Learn More..." for that grain to read the full paragraph.  
<https://wholegrainscouncil.org/whole-grains-101/grain-month-calendar>
- Add two additional details that you did not know prior to reading.

#### Purpose:

Not all cereals are created equal. This lesson prompts students to compare and contrast grains to see the vast differences in health impacts.



### Student Learning Outcomes for the Unit:

- Students will dissect their typical daily food consumption for whole grain content.
- Students will analyze a graph to spot differences in white, brown, and enriched grains.
- Students will compare and contrast food labels to determine the healthier breakfast.
- Students will cook pizza using the whole grain quinoa as its dough.
- Students will summarize a research finding about whole grain health benefits.

### National Agricultural Literacy Outcomes

Food, Health, and Lifestyle, Theme 3

T3.9-12

- A. Accurately read labels on processed food to determine nutrition content.
- C. Describe the nutritional value that can be added by processing foods.
- E. Explain food labeling terminology related to marketing and how it affects consumer choices (e.g., natural, free-range, certified organic, conventional, cage-free, zero trans- fat, sugar-free, reduced calorie).
- F. Explain how food production systems are influenced by consumer choices.
- G. Identify how various foods can contribute to a healthy diet.

### Vocabulary:

- **Cereal:** a category of grain-producing plants as well as a typical breakfast food, often enjoyed with milk
- **Enriched grain:** a refined grain that has had nutrients added back in less and different amounts than the original whole grain form
- **Food label:** facts posted on a food product to help consumers make informed choices by learning what's inside and how it's made
- **Nutrient dense:** when a food has a high level of beneficial ingredients like vitamins, minerals, healthy fats, complex carbs, and lean protein for its caloric value
- **Economical:** when the cost per serving ratio is favorable for a food product



### **Materials Needed:**

Quinoa Pizza Ingredients and supplies:

- 1 cup quinoa, uncooked and rinsed (or 3 cups prepared)
- 4 eggs, beaten
- ½ cup low-fat shredded mozzarella cheese
- 2 teaspoons extra virgin olive oil
- 1 tablespoon & 1 teaspoon low sodium Italian seasoning of choice
- 1 teaspoon baking powder
- ½ (14-ounce) jar pizza sauce of choice
- Low-fat shredded cheese of choice
- Preferred toppings (examples: mushrooms, turkey pepperoni, spinach)
- Parchment paper
- Baking sheet
- Measuring cups
- 1 pot
- 1 large plate
- Mixing bowl
- Mixing spoon
- Pizza cutter or knife





### Activity 1: Enrich Your Whole IQ

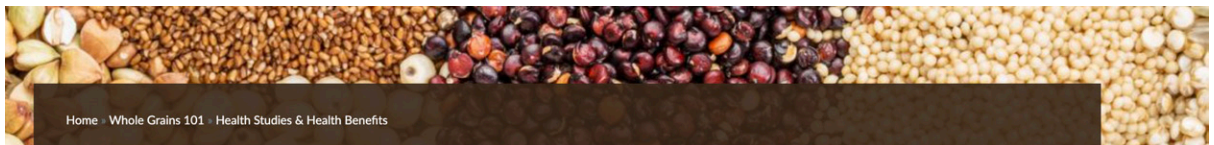
Grains can be whole, refined, or enriched. Rice is a common example of these variations. For instance, brown and wild rice are whole grains, whereas white rice is considered refined since parts of the whole grain have been removed. White rice can also be enriched when certain nutrients like iron and folate are added back to the grain, typically at different levels than in the prior form. What do all these variations mean?

- Examine “Data Tables Comparing Nutrients in Various Grains” and look for key differences on page 7.  
(Reference: Compare Nutrients in Various Grains, <https://wholegrainscouncil.org/whole-grains-101/health-studies-health-benefits/compare-nutrients-various-grains>).
- What is revealed to you as the most consistent, nutrient-dense choices for rice and wheat?



# Compare Nutrients in Various Grains

<https://wholegrainscouncil.org/whole-grains-101/health-studies-health-benefits/compare-nutrients-various-grains>



Home · Whole Grains 101 · Health Studies & Health Benefits

## COMPARE NUTRIENTS IN VARIOUS GRAINS

WHAT ARE THE HEALTH BENEFITS?

COMPARE NUTRIENTS IN VARIOUS GRAINS

WHOLE GRAINS: AN IMPORTANT SOURCE OF ESSENTIAL NUTRIENTS

People often ask us, "Which grain is healthiest?"

In our opinion, there is no "healthiest" grain, just as there is no healthiest vegetable. As the [chart we posted elsewhere on our site](#) illustrates, each grain has its own little specialties.

For example, teff and oats are especially high in manganese, essential to the formation of bone and cartilage and to many other functions. Kamut® khorasan wheat and durum wheat have 6 to 8 times more selenium than is found, on average, in gluten-free grains; selenium helps regulate thyroid function and prevent cellular damage from free radicals. Barley is highest in fiber, and quinoa trumps them all in folate. So how can we say which one is "healthiest?"

We're also not fond of this question because we don't believe in "eating by the numbers." Eating should be a pleasurable experience, relaxing with friends and family while enjoying healthy, delicious foods. If you base your diet largely on minimally processed whole foods, there's no need to count calories, fiber grams – or even whole grain grams.

That said, you may well have some medical reason for delving deeper into the nutrient content of different grains, or you may just be curious. To help you out, we've looked up all the common grains in the [USDA's Nutrient Database](#) and entered their nutrient values in a spreadsheet, to make them easy to compare.

[Click here to download the Grains Compared spreadsheet.](#)

### COMPARE THE NUTRIENTS IN WHOLE AND REFINED GRAINS

You may also be interested to see how refining grains (removing their bran and germ) impacts the nutrients in a grain. Did you know that refining grains takes away half to two-thirds of a wide range of nutrients? It's true that some refined grains are then "enriched" – some of the missing nutrients are added back in – but enrichment of wheat, for example, generally adds back only five of the missing nutrients, and does so in amounts different from their original proportions.

+ [Whole Wheat vs Refined Wheat vs Enriched Wheat](#)

+ [White Rice vs Brown Rice vs Enriched White Rice](#)



# "Data Tables Comparing Nutrients in Various Grains"

## Data Tables Comparing Nutrients in Various Grains

Source: [Whole Grains Council website](#)

### Whole Wheat versus Refined Wheat versus Enriched Wheat

Percentage of vitamins or nutrients in each type of flour listed.

Vitamin or Nutrient	Whole Wheat Flour	Refined Wheat Flour	Enriched Wheat Flour
Vitamin E	100	8	0
Vitamin B6	100	11	0
Magnesium	100	16	0
Thiamin (B1)	100	24	156
Riboflavin (B2)	100	24	299
Niacin (B3)	100	25	119
Fiber	100	25	0
Potassium	100	29	0
Iron	100	33	129
Folate	100	59	661
Protein	100	78	0

### White Rice versus Brown Rice versus Enriched White Rice

Percentage of vitamins or nutrients in each type of rice listed.

Vitamin or Nutrient	Brown Rice	White Rice	Enriched White Rice
Thiamin (B1)	100	13	106
Magnesium	100	22	0
Niacin (B3)	100	25	65
Vitamin B6	100	34	0
Folate	100	35	1683
Fiber	100	36	0
Potassium	100	46	0
Riboflavin (B2)	100	52	0
Iron	100	62	334
Protein	100	95	0



### Tweet All About it

- Search the **Whole Grain Council's Health Studies website** to learn more about how grains benefit our health.
- You can filter by keyword, grain, or disease/condition.
- Select a study summary you find most interesting to read.
- Rewrite a summary of the health benefits as a tweet (approximately 40 - 70 words long).

# Whole Grain Council's Health Studies

<https://wholegrainscouncil.org/whole-grains-101/health-studies>

## HEALTH STUDIES

Every day, more and more studies show the benefits of whole grains. We regularly post new studies here, where you can browse through them at random. Or, you can use our filters to hone in on a specific question, such as "Does barley reduce the risk of diabetes?" or "What's the research about whole grains and hypertension?"

WHAT ARE THE HEALTH BENEFITS?

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COMPARE NUTRIENTS IN VARIOUS GRAINS

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WHOLE GRAINS: AN IMPORTANT SOURCE OF ESSENTIAL NUTRIENTS

**SEARCH HEALTH STUDIES**

BY KEYWORD

BY GRAIN

- Amaranth
- Carbohydrates
- Cereal Fiber
- Barley
- Buckwheat
- Bulgur
- Corn
- Farro

BY DISEASE/CONDITION

- Abdominal / Visceral Fat
- Acne
- Aging
- Alzheimer's

Disease

- Arthritis
- Asthma / Allergies

SEARCH

Show 12 per page

**WHOLE GRAIN PUBLIC-PRIVATE PARTNERSHIPS CAN INCREASE WHOLE GRAIN INTAKE**

Public-private partnerships include collaborations between governments, industry, and/or nonprofits to work towards a common objective, and can be a great strategy to make progress on population-wide goals, such as improving whole grain intake. In this study, researchers examined 3 of the most well-known whole grain public-private partnerships (the Oldways Whole Grains Council in the US, the Danish Whole Grain Partnership, and the Grains and Legumes Nutrition Council in Australia) to identify best practices for increasing whole grain intake globally. The study concludes that to successfully improve whole grain intakes in the long-term, public-private partnerships should address environmental sustainability, be incorporated into front-of-pack labeling schemes, and reach out those who eat the least amount of whole grain.

*Journal of Cereal Science. 2022 May. doi: 10.1016/j.jcs.2022.103456 (Sluyter C et al)*

**EATING MORE WHOLE GRAINS IS LINKED WITH SUBSTANTIAL HEALTHCARE COST SAVINGS**

Health economics, the practice of quantifying how much money could be saved by taking certain health promotion measures (such as eating more whole grains) is a growing area of research. In this study, researchers analyzed 4 different models for measuring the health savings of eating more whole grains to identify best practices and inform future research. They found that while results varied from one study to the next, each method identified substantial health savings if people were to make more of their grains whole. The authors recommend that future studies consider realistic behavior changes, which may vary from one country to the next.

*Journal of Cereal Science. 2022 May. doi: 10.1016/j.jcs.2022.103455 (Miller KB et al)*





## Compare and Contrast the Facts

This next activity is from a video called, "**Reading the Food Label**". View the video screenshots and read along with the narration to learn about reading food labels and nutrition facts on food products. Knowing how to do this can help us be savvy shoppers. We can purchase more economical and nutrient-dense products with the power of this information.

# Reading the Food Label

[www.youtube.com/watch?v=s5zroZfMn0I](http://www.youtube.com/watch?v=s5zroZfMn0I)



The Nutrition Facts label provides information that can help you make decisions about the foods you eat.



Here are some tips to help you use the information you find on the label.



Nutrition Facts	
8 servings per container	
<b>Serving size</b>	<b>1 cup (82g)</b>
<b>Amount per serving</b>	
<b>Calories</b>	<b>230</b>
<b>% Daily Value*</b>	
<b>Total Fat</b> 8g	<b>10%</b>
Saturated Fat 1g	<b>5%</b>
Trans Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 160mg	<b>7%</b>

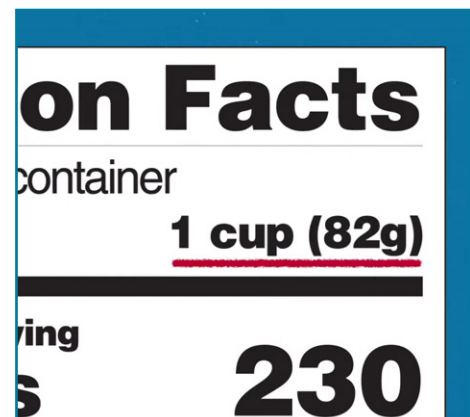
Start at the top and look at how many servings of the food are in the package.



There are eight servings in this package.

Nutrition Facts	
8 servings per container	
<b>Serving size</b>	<b>1 cup (82g)</b>
<b>Amount per serving</b>	
<b>Calories</b>	<b>230</b>
<b>% Daily Value*</b>	
<b>Total Fat</b> 8g	<b>10%</b>
Saturated Fat 1g	<b>5%</b>
Trans Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 160mg	<b>7%</b>
<b>Total Carbohydrate</b> 37g	<b>13%</b>

Next, look at how big the serving size is.



We can see for this item the serving size is one cup.



Pay attention to the size and number of servings you eat or drink, as it may be bigger or smaller than the serving size listed.

<b>Nutrition Facts</b>	
8 servings per container	
<b>Serving size</b>	<b>1 cup (82g)</b>
<hr/>	
<b>Amount per serving</b>	
<b>Calories</b>	<b>230</b>
<hr/>	
<b>% Daily Value*</b>	

Below the serving size is calories.



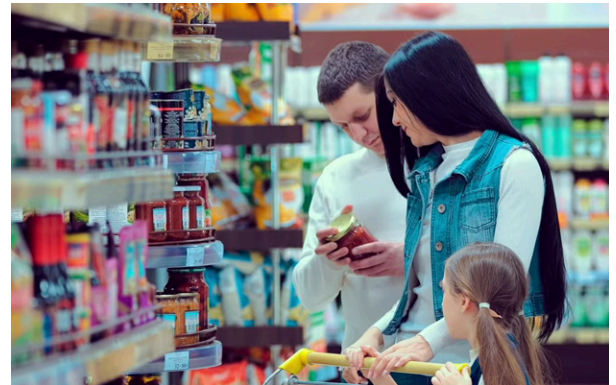
<b>Nutrition Facts</b>	
8 servings per container	
<b>Serving size</b>	<b>1 cup (82g)</b> x 2
<hr/>	
<b>Amount per serving</b>	
<b>Calories</b>	<b>230</b> x 2

**2 x 230 = 460**

The thing to remember with calories, is that you may consume more or less than what is listed on the label based on the number of servings you eat.

For example, if you ate two cups of this food item, you'd be consuming 460 calories.





Everyone has different amounts of calories they need for their body, so choose what is right for you.

<b>Total Fat</b> 8g	<b>10%</b>
<u>Saturated Fat</u> 1g	<b>5%</b>
<i>Trans Fat</i> 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 160mg	<b>7%</b>
<b>Total Carbohydrate</b> 37g	<b>13%</b>
Dietary Fiber 4g	<b>14%</b>
Total Sugars 12g	
<u>Includes 10g Added Sugars</u>	<b>20%</b>
<b>Protein</b> 3g	
<hr/>	
Vitamin D 2mcg	10%
Calcium 260mg	20%

The label also shows some key nutrients that impact your health.



Saturated fat, sodium, and added sugars are nutrients listed on the label, that people generally consume too much of and can lead to negative health effects.



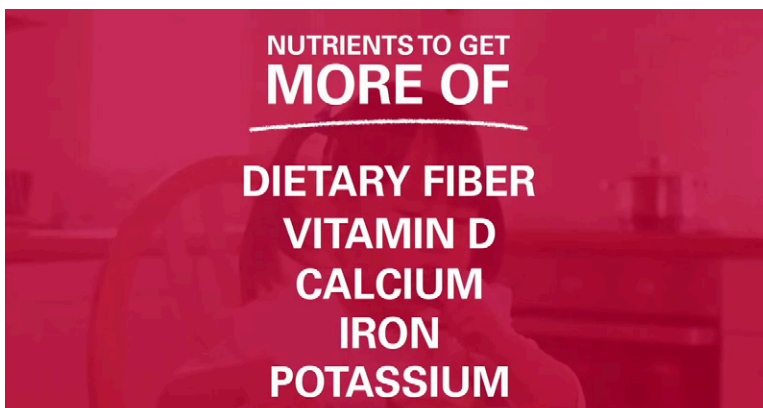


These are nutrients to get less of.

<b>Total Carbohydrate</b> 37g	<b>13%</b>
<u>Dietary Fiber</u> 4g	<b>14%</b>
Total Sugars 12g	
Includes 10g Added Sugars	<b>20%</b>
<b>Protein</b> 3g	
<u>Vitamin D</u> 2mcg	10%
<u>Calcium</u> 260mg	20%
<u>Iron</u> 8mg	45%
<u>Potassium</u> 235mg	6%

\* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

On the other hand, dietary fiber, vitamin D, calcium, iron, and potassium are nutrients that people generally do not get the recommended amount of and are important for good health.



These are called nutrients to get more of.



One way, to help you determine if a food is a high or low source of a nutrient, is to look at the percent daily value.

## % DAILY VALUE (DV)

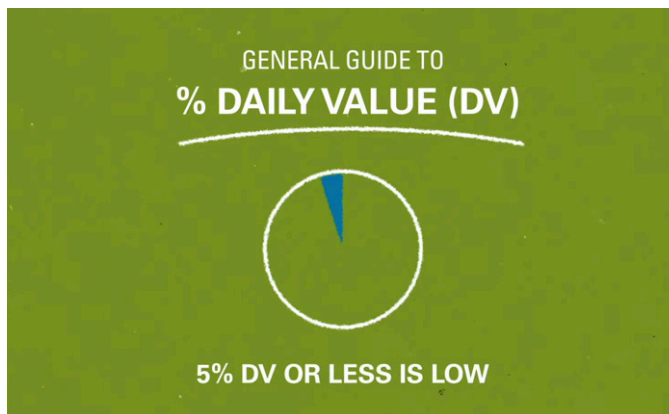
HOW MUCH A NUTRIENT IN A SERVING OF FOOD, CONTRIBUTES TO THE DAILY RECOMMENDED AMOUNT.

The percent daily value shows how much a nutrient in a serving of food contributes to the daily recommended amount.

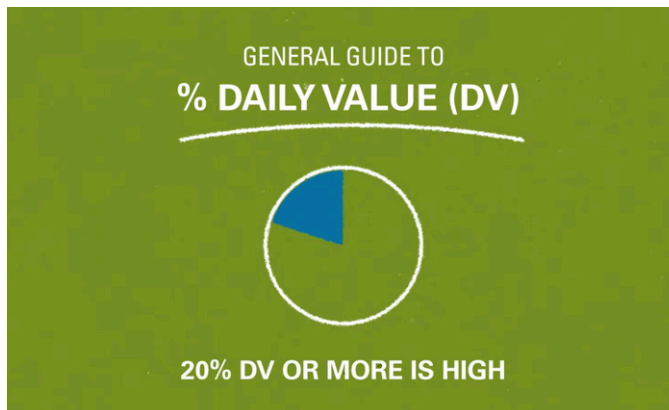


<b>Calories</b>	<b>230</b>
<b>% Daily Value*</b>	
<b>Total Fat</b> 8g	<b>10%</b>
Saturated Fat 1g	<b>5%</b>
<i>Trans</i> Fat 0g	
<b>Cholesterol</b> 0mg	<b>0%</b>
<b>Sodium</b> 160mg	<b>7%</b>
<b>Total Carbohydrate</b> 37g	<b>13%</b>
Dietary Fiber 4g	<b>14%</b>
Total Sugars 12g	
Includes 10g Added Sugars	<b>20%</b>
<b>Protein</b> 3g	

For example, a serving of this food provides seven percent of the recommended amount of sodium for the day.



A general guide to percent daily value is 5% DV or less is considered low, ...



20% DV or more is considered high.



**CHOOSE FOODS HIGHER IN %DV FOR:**

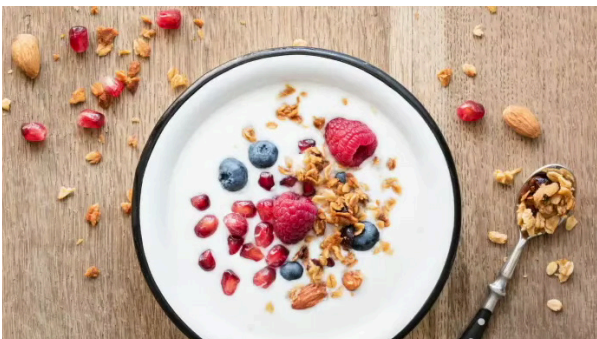


More often, choose foods that are higher in percent daily value for...

dietary fiber,



vitamin D,



calcium,



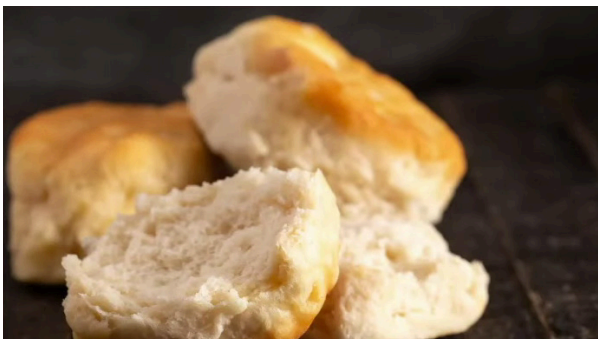


iron,



and potassium.

**CHOOSE FOODS LOWER IN %DV FOR:**



And choose foods that are lower in percent daily value for...

saturated fat,



sodium,



and added sugars.



The next time you go to the store, use these tips to help you choose foods to best meet your nutrition needs.



Take what you learn from "**Reading the Food Label**" and use it to weigh the labels of two popular cereal choices against each other:

- *Quaker Old Fashioned Oats*
- *Kellogg's Froot Loops*

Open each product's information link. You may have to scroll down on the right to view the full "Nutrition Info" for the oats. Be sure to view the left side column (i.e., without milk, just the cereal) for the Froot Loops, since that is how the oats information is given (i.e., without milk). The information provided is based on an approximately 40 grams serving size for each cereal.



## Nutrition Facts

About 13 servings per container

**Serving Size**  
1/2 Cup Dry (40 g)

Amount Per Serving  
**Calories** **150**

% Daily Value\*

**Total Fat** 3g **4%**

Saturated Fat 0.5g **3%**

Trans Fat 0g

Polyunsaturated Fat 1g

Monounsaturated Fat 1g

**Cholesterol** 0mg **0%**

**Sodium** 0mg **0%**

**Total Carbohydrate** 27g **10%**

Dietary Fiber 4g **13%**

Soluble Fiber 2g

Total Sugars 1g

Includes 0g Added Sugars **0%**

**Protein** 5g

Vitamin D 0mcg **0%**

Calcium 20mg **0%**

Iron 1.5mg **8%**

Potassium 150mg **2%**

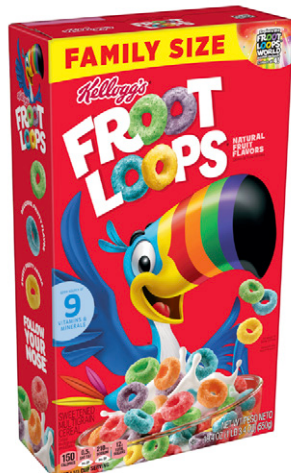
Thiamine 0.2mg **15%**

Phosphorus 130mg **10%**

Magnesium 40mg **10%**

\*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

**Ingredients:** Whole grain rolled oats.



### Nutrition Facts

Servings Per Container About 14  
 Serving Size 1 1/3 Cup (39 g)

Amount Per Serving	Cereal		with 3/4 cup skim milk	
<b>Calories</b>	<b>150</b>		<b>210</b>	
		% Daily Value*		% Daily Value*
<b>Total Fat</b>	1.5 g	2%	1.5 g	2%
Saturated Fat	0.5 g	3%	1 g	5%
Trans Fat	0 g		0 g	
Polyunsaturated Fat	0 g		0 g	
Monounsaturated Fat	0 g		0 g	
<b>Cholesterol</b>	0 mg	0%	<5 mg	1%
<b>Sodium</b>	210 mg	9%	280 mg	12%
<b>Total Carbohydrate</b>	34 g	12%	43 g	16%
Dietary Fiber	2 g	8%	2 g	8%
Total Sugars	12 g		22 g	
<b>Includes 12g Added Sugars</b>	12 g	24%	12 g	24%
<b>Protein</b>	2 g		8 g	
<b>Vitamin D</b>	2 mcg	10%	4.2 mcg	20%
<b>Calcium</b>	0 mg	0%	220 mg	15%
<b>Iron</b>	4.5 mg	25%	4.5 mg	25%
<b>Potassium</b>	60 mg	0%	340 mg	6%
<b>Vitamin C</b>		25%		25%
<b>Thiamin</b>		20%		25%
<b>Riboflavin</b>		20%		45%
<b>Niacin</b>		20%		25%
<b>Vitamin B6</b>		20%		20%
<b>Folate (45 mcg Folic Acid)</b>	80 mcg	20%	85 mcg	20%
<b>Vitamin B12</b>		20%		50%

\*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.





### Part 1 Questions

Now that we have them side by side for a more fair evaluation, write down your answers to these questions:

1. What are the first two ingredients listed for each?
2. Per serving, which has more fiber? More protein?
3. More added sugar? More sodium? More saturated fat?
4. Optional:
  - What does each cereal cost at walmart.com? (Use the 18-ounce oats and 19.4 ounce Froot Loops for a more similar analysis)
  - How many serving are listed for each of those sizes?
5. How many servings are listed for each of those sizes?

### Part 2 Questions

Now discuss what your findings might mean with a classmate or family member:

1. We want more fiber because it energizes us, helps us feel full, and aids digestion and more protein because it makes us the machines we are and powers us each day. Which is a better source for more of these?
2. We want less added sugar, sodium, and saturated fat because eating a lot of these everyday is associated with more health risks like obesity, diabetes, and heart disease. Which is a better source for less of these?
3. Both offer about the same number of servings, but one costs more overall and per ounce. Which purchase will feed you more for what you pay?

After you answer the questions in parts 1 and 2, look at the Answer Key on page 35 to see how many you got right!



## Guess the Grains Matching Game

- Gauge what you already know about whole grains and learn something new about the many kinds, their qualities, the ways they are enjoyed, and their cultural roots.
- Play the game! **Guess the Grains Matching Game on page 23.**
- Note: you will not use all choices available in the word bank.
- Use the Grain descriptions for additional information to help you match the grains on pages 24-31.
- When you're done with the matching game, check your answers with the "Answer Key to Guess the Grains Matching Game" on page 36. How many did you answer correctly?



## "Guess the Grains Matching Game"

### Whole Grain Facts

#### 1. Grain 1

- a. Gluten-Free: Yes
- b. Origins: The Americas, Native American Diets
- c. Qualities: Sweet, Hard Kernel, Ground Meal
- d. Common Uses: Cornbread, Popcorn

#### 2. Grain 2

- a. Gluten-Free: Yes
- b. Origins: India, China
- c. Qualities: Buttery, Small, Grit-like
- d. Common Uses: Curries, Pilafs, Stir Fries

#### 3. Grain 3

- a. Gluten-Free: No
- b. Origins: Fertile Crescent, Greek Roman
- c. Qualities: Savory, Chewy, Rice-shaped
- d. Common Uses: Rice Sub, Soups, Risottos

#### 4. Grain 4

- a. Gluten-Free: Yes
- b. Origins: Latin America, Southeast Asia
- c. Qualities: Peppery
- d. Common Uses: Sweet and Savory Dishes

#### 5. Grain 5

- a. Gluten-Free: Yes
- b. Origins: Northern European, Rainy Climates
- c. Qualities: Sweet and Savory Dishes, Chewy
- d. Common Uses: Porridge, Rice Sub, Cosmetics

#### 6. Grain 6

- a. Gluten-Free: No
- b. Origins: Eastern European, Cold Climates
- c. Qualities: Rich and Tangy
- d. Common Uses: Baked Goods, Savory Dishes

#### 7. Grain 7

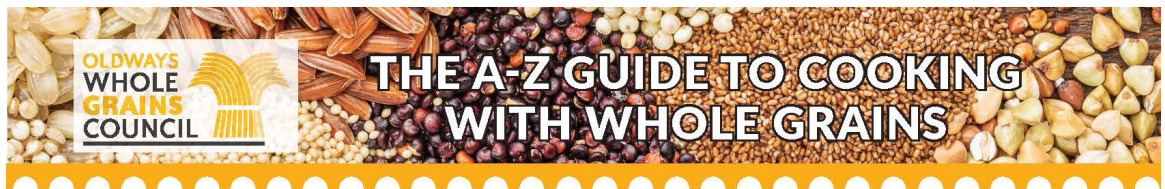
- a. Gluten-Free: Yes
- b. Origins: North America, Great Lakes
- c. Qualities: Nutty, Chewy
- d. Common Uses: Soups, Stuffing, Grain Salads

#### 8. Grain 8

- a. Gluten-Free: Yes
- b. Origins: Africa, Drought Tolerant
- c. Qualities: Sweet, Hints of Corn and Wheat
- d. Common Uses: Baked Goods, Couscous Sub

### Whole Grain Word Bank

- A. Amaranth
- B. Barley
- C. Buckwheat
- D. Bulgur
- E. Corn
- F. Freekeh
- G. Millet
- H. Oats
- I. Quinoa
- J. Rice
- K. Rye
- L. Sorghum
- M. Teff
- N. Whole Wheat Flour
- O. Wheat Berries & Ancient Wheats
- P. Wild Rice



## AMARANTH

**Cook 1 cup dry grain with:** 2 cups liquid (expands to 2½ cups cooked grain)

**Cook Time:** Bring to boil, then simmer 15–20 minutes

**Best Uses:** Porridge or polenta style recipes. Great thickener for stews. Can also be popped like popcorn. Tiny sized grains almost burst between your teeth. Not well suited for grain salads or pilafs.

**Flavor Profile:** Peppery taste, with a pleasantly sweet, grassy aroma. Pairs well with squash, corn, sesame, cinnamon, vanilla, and chocolate.

**Gluten-free? Yes**

**History:** Technically a pseudo-grain, amaranth is a staple of the Aztecs, with a long history in Mexican & Peruvian cuisine (later becoming popular in Nepal, India, and other countries). It's typically enjoyed as breakfast porridge throughout Latin America and Southeast Asia, but in Mexico, it's also served popped with honey as a sweet snack called *allegria*.

**Nutrition in 1 serving (¼ cup uncooked):** 180 calories, 3g fiber, 7g protein. Excellent source of magnesium, manganese & phosphorus. Good source of iron, copper, selenium, and Vitamin B6.

**Recipe Ideas:**

- » Orange Scented Amaranth Porridge with Apricots and Pine Nuts (Maria Speck, *Simply Ancient Grains*)
- » Amaranth Muesli with Toasted Seeds (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- » Vanilla Amaranth with Peach Compote (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Spicy Beef Chili with Amaranth and Lime (Maria Speck, *Simply Ancient Grains*)
- » Amaranth Polenta with Wild Mushrooms (Lorna Sass, *Whole Grains: Every Day, Every Way*)
- » Pea and Goat Cheese Amaranth Risotto (Jodi Moreno, *Grains as Mains*)
- » Popped Amaranth and Sesame Candies (Ann Taylor Pittman, *Everyday Whole Grains*)

## BARLEY (LOOK FOR "WHOLE GRAIN," "HULLED," OR "DEHULLED,")

**Cook 1 cup dry grain with:** 3 cups liquid (expands to 3½ cups cooked grain)

**Cook Time:** Bring to boil, then simmer 45–60 minutes (some brands recommend an overnight soak)

**Best Uses:** Pleasantly firm chew makes it ideal for grain salads and pilafs. Great substitute for rice, especially in curries, stir fries, and risottos. (Note that pearled barley is not whole grain.)

**Flavor Profile:** Rich flavor with a mild sweetness. Pairs well with mushrooms, root vegetables, warm spices, and fall flavors (like apple).

**Gluten-free? No**

**History:** One of the oldest grains cultivated in the Fertile Crescent, barley (often cooked as a porridge or baked into a crude bread) was also one of the first grains eaten in the ancient cuisines of China and Egypt, and was an important source of nutrition during Greek and Roman times.

**Nutrition in 1 serving (¼ cup uncooked):** 160 calories, 8g fiber (more than any other whole grain!), 6g protein. Excellent source of manganese, selenium, and thiamin. Good source of magnesium, phosphorus, copper, and niacin.

**Recipe Ideas:**

- » Barley and Wild Rice Dressing with Fennel, Apples, and Marsala (Maria Speck, *Simply Ancient Grains*)
- » BBQ Baked Barley (Ann Taylor Pittman, *Everyday Whole Grains*)
- » French Onion Soup with Barley (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Greek Inspired Fresh Artichokes with Barley and Tomatoes (Maria Speck, *Simply Ancient Grains*)
- » Pecan and Barley Burgers with Peach Ketchup (Robin Asbell, *The Whole Grain Promise*)
- » Crystalized Ginger and Barley Tea Bread (Robin Asbell, *The New Whole Grains Cookbook*)





## BUCKWHEAT

**Cook 1 cup dry grain with:** 2 cups liquid (expands to 4 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 20 minutes

**Best Uses:** To keep the grains from becoming too creamy, buckwheat is often coated with an egg (or other fat) before cooking. These pyramidal shaped grains work well in casseroles, and breakfast porridges. Buckwheat flour is quite versatile, adding richness to soba noodles, pancakes, and pastries. Flavor Profile: Robust and earthy. Pairs well with dried fruit, dark spices, beets, walnuts, and hazelnuts. Untoasted (raw) buckwheat groats have a much milder flavor than toasted buckwheat (kasha).

**Gluten-free? Yes**

**History:** Technically a pseudo-grain (it is not even related to wheat), buckwheat has a strong history in Asian and Eastern European cuisine because it can grow in cold climates. It is the grain of choice in traditional dishes around the globe, including French crepes, Russian blini, Japanese soba noodles, and Jewish kasha. Buckwheat is also a popular cover crop, restoring the soil between seasons of farming.

**Nutrition in 1 serving (¼ cup uncooked):** 140 calories, 4g fiber, 5g protein. Excellent source of magnesium, copper, and manganese. Good source of phosphorus, riboflavin, and niacin.

**Recipe Ideas:**

- » Chocolate Buckwheat Waffles with Juicy Berries (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Cheesy Buckwheat with Kale and Mushrooms (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Savory Kasha with Parsnips (Robin Asbell, *The Whole Grain Promise*)
- » Beet and Buckwheat Borscht with Parsley-Yogurt Garnish (Robin Asbell, *The Whole Grain Promise*)
- » Thai Buckwheat Larb (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Buckwheat Gingerbread (Alice Medrich, *Flavor Flours*)
- » Buckwheat Butter Cookies (Claire Ptak, *The Violet Bakery Cookbook*)

## BULGUR WHEAT

**Cook 1 cup dry grain with:** 2 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 10–12 minutes (fine bulgur reconstitutes just by soaking)

**Best Uses:** The fluffy, chewy texture makes it ideal for grain salads, sides, and pilafs. Great for adding substance to light dishes. It also is delicious served warm as a creamy breakfast porridge.

**Flavor Profile:** Nutty, wheat flavor. Pairs well with parsley, tomatoes, cinnamon, and most fresh produce.

**Gluten-free? No**

**History:** Bulgur is wheat that's been pre-cooked then cracked into smaller pieces (hence, the quick cooking time). In fact, some call it "ancient fast food." Bulgur wheat has a rich history in Eastern Mediterranean cuisine, dating back to Egypt and the Ottoman Empire.

**Nutrition in 1 serving (¼ cup uncooked):** 120 calories, 4g fiber, 4g protein. Excellent source of manganese. Good source of magnesium, phosphorus, and niacin.

**Recipe Ideas:**

- » Overnight Peanut Butter Bulgur with Berries (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Bulgur Pilaf with Fresh Tomatoes, Thick Yogurt, and Fried Onion Strings (Paula Wolfert, *Mediterranean Grains and Greens*)
- » Zeliha Gungoren's Scallion Bulgur Pilaf with Golden Raisin Hoshaf (Paula Wolfert, *Mediterranean Grains and Greens*)
- » Mexican Stuffed Poblanos (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Lamb Burgers with Bulgur and Mint (Maria Speck, *Ancient Grains for Modern Meals*)
- » Creamy Bulgur with Honey and Tahini (Maria Speck, *Simply Ancient Grains*)



## CORN

**Cook 1 cup dry whole grain cornmeal with:** 4 cups liquid (expands to 2½ cups cooked grain)

**Cook Time:** Bring to boil, then simmer 25–35 minutes

**Best Uses:** Whole grain cornmeal is best suited for porridge or polenta style recipes. (Note: If it says degerminated, it's not whole grain!) Great thickener for stews. Not well suited for grain salads or pilafs. Popcorn is also considered a whole grain (although fresh corn, such as corn on the cob, is not).

**Flavor Profile:** Sweet taste. Pairs well with chiles, berries, stone fruit, aromatic spices, tomatoes, cumin, peppers, and beans.

**Gluten-free? Yes**

**History:** Corn is native to the Americas, and has a rich history in Aztec, Mayan, and Native American diets.

**Nutrition in 1 serving (¼ cup uncooked):** 110 calories, 2g fiber, 2g protein. Good source of phosphorus, magnesium, manganese, selenium, and thiamin.

**Recipe Ideas:**

- » Cornmeal Pancakes with Warm Cherry Sauce (Maria Speck, *Ancient Grains for Modern Meals*)
- » Orange Polentina with Honey Mascarpone Topping (Maria Speck, *Ancient Grains for Modern Meals*)
- » Sweet Corn and Zucchini Quiche with Cornmeal Crust (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Whole Grain Cornbread (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Savory Grits with Slow-Cooked Collard Greens (Bryant Terry, *Afro-Vegan*)
- » Rustic Fall Polenta with Fontina and Sun-Dried Tomatoes (Maria Speck, *Ancient Grains for Modern Meals*)
- » Almond Polenta Tart with Sherried Plum Compote (Maria Speck, *Simply Ancient Grains*)

## FREEKEH GREEN WHEAT

**Cook 1 cup dry grain with:** 2½ cups liquid (expands to about 2½ to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 20–25 minutes (longer if not using cracked freekeh)

**Best Uses:** The fluffy, chewy texture makes it ideal for grain salads, sides, and pilafs. Great for adding substance to light dishes. Flavorful grain base for meat dishes and other entrees.

**Flavor Profile:** Signature smoky flavor. Pairs well with Middle Eastern flavors, especially cinnamon, tomatoes, lemon, and pine nuts.

**Gluten-free? No**

**History:** Found mostly in Middle Eastern and North African cuisine, freekeh wheat traces its roots back several thousand years to ancient Egypt and surrounding areas. Legend has it that freekeh was discovered when an ancient village in the Eastern Mediterranean hurriedly picked young wheat before an attack on their city. Attackers' fires burned the young wheat, but the result was quite delicious.

**Nutrition in 1 serving (¼ cup uncooked):** 160 calories, 6g fiber, 7g protein. Good source of iron.

**Recipe Ideas:**

- » Apple Cinnamon Breakfast Freekeh (Jodi Moreno, *Grains as Mains*)
- » Kale and Freekeh Frittata (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Roasted Cauliflower and Freekeh Salad (Gena Hamshaw, *Food52 Vegan*)
- » Freekeh with Chard and Roasted Carrots (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Middle Eastern Freekeh Salad with Sesame Yogurt Dressing (Robin Asbell, *The Whole Grain Promise*)
- » Baked Chicken Freekeh Paella (Jodi Moreno, *Grains as Mains*)
- » Baked Moroccan Lamb Stew with Freekeh (Jodi Moreno, *Grains as Mains*)



## MILLET

**Cook 1 cup dry grain with:** 2½ cups liquid (expands to 4 cups fluffy, cooked grain)

**Cook Time:** Bring to boil, then simmer 25–35 minutes

**Best Uses:** Depending on how much liquid you use, millet can be prepared fluffy (for pilafs and grain salads), sticky (for croquettes and patties), or creamy (for warm porridge). Millet is also a delightful base for curries, stir fries, and pilafs. Best served warm.

**Flavor Profile:** Buttery. Pairs well with mushrooms, herbs, warm spices, scallions, and squash.

**Gluten-free? Yes**

**History:** Millet is one of the leading staple grains of India, and was also used in ancient Chinese noodles before wheat was domesticated. Although common in birdseed in the US, nutritious millet is also important to the cuisines of South America, Russia, the Himalayas, and Africa.

**Nutrition in 1 serving (¼ cup uncooked):** 190 calories, 4g fiber, 6g protein. Excellent source of manganese. Good source of magnesium, phosphorus, copper, thiamin, and niacin.

**Recipe Ideas:**

- » Fresh Peach, Banana, and Warm Millet Smoothie (Bryant Terry, *Afro-Vegan*)
- » Millet and Sweet Potato Porridge (Bryant Terry, *Afro-Vegan*)
- » Orange Millet Scones (Sharon Palmer, *Plant Powered for Life*)
- » Creamy Curried Carrot-Millet Soup with Mint (Robin Asbell, *The Whole Grain Promise*)
- » Millet Cauliflower Mashed Potatoes (Robin Asbell, *The New Whole Grains Cookbook*)
- » Millet, Squash, and Sweet Corn Pilaf with Tamari Roasted Pumpkin Seeds (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- » Dirty Millet (Bryant Terry, *Afro-Vegan*)
- » Lemon Millet Pudding with Caramelized Grapes (Maria Speck, *Simply Ancient Grains*)

## OATS

**Cook 1 cup dry steel cut oats with:** 4 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 30 minutes

**Best Uses:** Porridge or polenta style recipes. Steel cut oats can also be substituted for rice in risotto style recipes. Not well suited for grain salads or pilafs.

**Flavor Profile:** Sweet toasty aroma with hints of butterscotch. Pairs well with cinnamon, dried and fresh fruit, thyme, mushrooms, walnuts, coffee, and coconut.

**Gluten-free? Yes. (Check for certified gluten-free oats, as oats are frequently cross contaminated with gluten during growing and processing.)**

**History:** Oats are the porridge of choice in Scotland, Ireland, and other northern European nations, as they grow best in cool, rainy climates. Today, most oats are steamed and flattened to produced rolled oats, quick oats, or instant oats—but all are whole grain, as the bran and germ are virtually always left intact. Oats have also been used in cosmetics for their anti-itching properties.

**Nutrition in 1 serving (¼ cup uncooked):** 150 calories, 4g fiber, 7g protein. Excellent source of phosphorous, manganese, and thiamin. Good source of iron, magnesium, zinc, and copper.

**Recipe Ideas:**

- » Boil-and-Leave Steel Cut Oats (Robin Asbell, *The Whole Grain Promise*)
- » Sprouted Lentil Granola with Apricots (Sharon Palmer, *Plant Powered for Life*)
- » Dark Chocolate Muesli with Hazelnuts (Maria Speck, *Ancient Grains for Modern Meals*)
- » Sweet Potato and Oat Cakes with Blue Cheese and Sage (Maria Speck, *Simply Ancient Grains*)
- » Steel Cut Oats Risotto with Asparagus (Sharon Palmer, *Plant Powered for Life*)
- » Chocolate Oat Agave Cookies (Claire Ptak, *The Violet Bakery Cookbook*)
- » Pistachio Golden Raisin Cookies with Cardamom (Amy Chaplin, *At Home in the Whole Food Kitchen*)





## QUINOA

**Cook 1 cup dry grain with:** 2 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 12–15 minutes

**Best Uses:** Pleasantly firm chew even when served chilled, making it ideal for both warm and cold grain salads. Popular in sides and pilafs.

**Flavor Profile:** Hints of grassiness. Pairs well with nearly anything, especially Latin American ingredients (corn, black beans, avocado, citrus, cilantro, peppers, & tomatoes). Be sure to rinse well before cooking, as quinoa has a bitter outer coating (saponin) that needs to be washed off.

**Gluten-free? Yes**

**History:** Technically a pseudo-grain (related to chard), quinoa was sacred to the Incas, and has been central to Bolivian and Peruvian diets for centuries. It's primarily grown high up in the Andes mountains, but some US producers are starting to grow their own also. Quinoa is one of the few plant foods that serves up a complete protein, offering all essential amino acids in a healthy balance.

**Nutrition in 1 serving (¼ cup uncooked):** 160 calories, 3g fiber, 6g protein. Excellent source of magnesium, phosphorus, and manganese. Good source of iron, copper, thiamin, and Vitamin B6.

**Recipe Ideas:**

- › Quinoa, Hazelnut, and Cherry Granola (Claire Ptak, *The Violet Bakery Cookbook*)
- › Herbed Black Quinoa Muffins with Sweet Potato and Caramelized Onions (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- › Quinoa Congee (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- › Mushroom, Chard, and Quinoa Enchiladas (Gena Hamshaw, *Food52 Vegan*)
- › Grilled Scallops with Orange Scented Quinoa (Giada de Laurentiis, *Giada's Feel Good Food*)
- › Cranberry, Orange, and Chocolate Quinoa Bars (Jodi Moreno, *Grains as Mains*)

## RICE (BROWN RICE, BLACK RICE, RED RICE, ETC.)

**Cook 1 cup dry brown rice with:** 2½ cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 25–45 minutes (varies)

**Best Uses:** Great as a base in curries, stir fries, risottos, and rice pudding. In fried rice, brown rice needs less oil. Shorter-grain rices are stickier, best suited for sushi and risotto, while longer-grain rices are great for pilafs. Can also be cooked in stock until soft and starchy, then blended and subbed for heavy cream (see Creamy Broccoli Cheese Soup below). In gluten-free baking, the bran and germ in brown rice flour also help make it less gummy.

**Flavor Profile:** Neutral, toasty flavor with hints of caramel. Accentuates other flavors, and pairs well with nearly anything, especially eggs, milk, and chocolate.

**Gluten-free? Yes**

**History:** Rice is grown on every continent except Antarctica, and has been a staple of cultures and cuisines for millennia. Rice provides 19% of the calories available worldwide, with an especially strong history in Asian cuisine. Whole grain rice is not just brown; it can also be red, black, or other colors.

**Nutrition in 1 serving (¼ cup uncooked):** 110 calories, 2g fiber, 2g protein. Good source of phosphorus, magnesium, manganese, selenium, and thiamin.

**Recipe Ideas:**

- › Black Rice Breakfast Pudding with Coconut and Banana (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- › Creamy Broccoli Cheese Soup (Ann Taylor Pittman, *Everyday Whole Grains*)
- › Chicken and Vegetable Biryani (Ann Taylor Pittman, *Everyday Whole Grains*)
- › Saffron Risotto with White-Wine Clams and Peas (Maria Speck, *Ancient Grains for Modern Meals*)
- › Black Sesame Rice Crackers (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- › Curried Corn and Coconut Rice (Bryant Terry, *Afro-Vegan*)
- › Almond and Brown Rice Brownies (Alice Medrich, *Flavor Flours*)
- › Brown Rice Pecan Sandies (Ann Taylor Pittman, *Everyday Whole Grains*)

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### RYE & TRITICALE (A WHEAT-RYE HYBRID)

**Cook 1 cup dry grain with:** 4 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** After soaking overnight, bring to boil, then simmer 45–60 minutes.

**Best Uses:** Rye berries & triticale berries can be used interchangeably with wheat berries in most recipes, and work especially well in pilafs, casseroles, and grain salads. Rye flour adds a distinct, rich flavor to baked goods, especially in yeast breads. Rye flakes and rye grits work well in breakfast porridge or polenta style recipes.

**Flavor Profile:** Rich and slightly tangy. Works well in Eastern European recipes, especially with cabbage, beets, mustard, raisins, and sweet and sour flavors.

**Gluten-free? No**

**History:** Because rye can grow in colder climates where many other grains can't survive, it has a long tradition in the cuisines of Russia, Poland, Scandinavia, Argentina, Turkey, China, and Canada. Rye and wheat have long cross-bred in nature, but it wasn't until 1937 that the mash-up called triticale became a fertile crop. Triticale grows easily without commercial fertilizers and pesticides.

**Nutrition in 1 serving rye (¼ cup uncooked):** 140 calories, 6g fiber, 4g protein. Excellent source of manganese. Good source of magnesium, phosphorus, copper, selenium, and niacin.

**Recipe Ideas:**

- » Sweet Potato, Coconut, Date, and Rye Muffins (Claire Ptak, *The Violet Bakery Cookbook*)
- » Oven Rye Porridge (Darra Goldstein, *Fire and Ice: Classic Nordic Cooking*)
- » Leek Salad with Grilled Halloumi Cheese and Rye Berries (Maria Speck, *Ancient Grains for Modern Meals*)
- » Flemish Beef Stew with Caramelized Onions and Rye (Maria Speck, *Simply Ancient Grains*)
- » Lamb, Toasted Rye Berry, and Apricot Tagine (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Aroma Bread With Coriander and Fennel (Maria Speck, *Ancient Grains for Modern Meals*)
- » Rye Chocolate Brownies (Claire Ptak, *The Violet Bakery Cookbook*)

### SORGHUM

**Cook 1 cup dry grain with:** 4 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 25–40 minutes

**Best Uses:** Pleasantly firm chew makes it ideal for grain salads and pilafs. Its pearly shape makes it a great substitute for couscous. Can also be popped, like popcorn. Sorghum flour performs beautifully in pancakes, waffles, crepes, and cookies.

**Flavor Profile:** Sweet taste, with hints of corn or wheat flavor. Pairs especially well with Southern ingredients, like ham, bourbon, pecans, peanuts, berries, dates, figs, banana, and warm spices.

**Gluten-free? Yes**

**History:** Sorghum (also called milo) is believed to have originated in Africa, where it remains an important cereal grain, even today. It is naturally drought tolerant, making it a smart choice for diners eating with their environmental footprint in mind. Traditionally, sorghum is used in porridges, flatbreads, and even beverages.

**Nutrition in 1 serving (¼ cup uncooked):** 160 calories, 3g fiber, 5g protein. Excellent source of manganese. Good source of magnesium, phosphorus, selenium, and vitamin B6.

**Recipe Ideas:**

- » Sorghum and Eggs Ranchero (Jodi Moreno, *Grains as Mains*)
- » Spring Vegetable and Sorghum Minestrone (Jodi Moreno, *Grains as Mains*)
- » Grilled Raddichio and Sorghum Pilaf (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Milo Salad with Oregano, Feta Cheese, and Cucumbers (Jesse Cool, *The Oldways Table*)
- » Sorghum Ice Cream with Peanut Brittle (Alice Medrich, *Flavor Flours*)
- » Puffed Sorghum Salted Caramel Popcorn Balls (Jodi Moreno, *Grains as Mains*)



## TEFF

**Cook 1 cup dry grain with:** 3 cups liquid (expands to 2½ cups cooked grain)

**Cook Time:** Bring to boil, then simmer 20 minutes

**Best Uses:** Porridge or polenta style recipes. Great thickener for stews. Not well suited for grain salads or pilafs. Teff flour adds a rich, cocoa flavor to baked goods.

**Flavor Profile:** Slightly sweet taste with undertones of cocoa and hazelnut. Pairs well with nuts, chocolate, seeds, pumpkin, and dark fruit.

**Gluten-free? Yes**

**History:** Teff is a tiny (less than 1mm) grain native to the Horn of Africa, where nomads could carry enough teff seed in their pocket to sow an entire field. In fact, its name may come from the Amharic word for "lost" because the seed is so tiny. Teff is most well known as the main ingredient in injera, the spongy flatbread that Ethiopians use in place of utensils.

**Nutrition in 1 serving (¾ cup uncooked):** 180 calories, 4g fiber, 6g protein. Excellent source of magnesium, copper, and manganese. Good source of iron, phosphorus, zinc, thiamin, and vitamin B6.

**Recipe Ideas:**

- » Teff Porridge with Dates, Figs, and Pistachios (Sharon Palmer, *Plant Powered for Life*)
- » Crispy Teff and Grit Cakes with Eggplant, Tomatoes, and Peanuts (Bryant Terry, *Afro-Vegan*)
- » Cajun-Spiced Shrimp on Creamy, Cheddar Teff (Ann Taylor Pittman, *Everyday Whole Grains*)
- » African Sweet Potato, Teff, and Greens Stew (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Superfast Injera (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Peanut Butter and Jelly Thumbprint Cookies (Ann Taylor Pittman, *Everyday Whole Grains*)
- » Bittersweet Teff Brownies (Alice Medrich, *Flavor Flours*)

## WHOLE WHEAT FLOUR (INCLUDING KAMUT®, SPELT & EINKORN FLOUR)

**Best Uses:** Whole wheat flour can be substituted for up to 50% of the all-purpose flour in a recipe without making adjustments. To convert a recipe to 100% whole wheat, add an extra 2 tsp liquid per cup of flour, then let the dough rest for 20 minutes after mixing. White whole wheat flour has a milder flavor and lighter color. Whole wheat pastry flour and sprouted whole wheat flour are also good options for baking, while whole grain spelt flour is well suited for pasta and pastries.

**Flavor Profile:** Hearty and slightly nutty. Pairs well with nearly everything, especially honey, chicken, squash, mushrooms, cheese, and warm spices.

**Gluten-free? No**

**History:** Wheat is one of the earliest domesticated grains, and even today provides 19% of available calories. Breads (nearly always made from wheat) have been a mealtime staple for centuries, and whole wheat breads in particular were especially common before the advent of roller milling in the late 1800's. Wheat was to the Mediterranean what rice was to Asia and corn was to Latin America.

**Nutrition in 1 serving (¾ cup flour):** 100 calories, 3g fiber, 4g protein. Good source of magnesium, phosphorus, and thiamin.

**Recipe Ideas:**

- » Prune, Oat, and Spelt Scones (Claire Ptak, *The Violet Bakery Cookbook*)
- » Whole Wheat Jalapeno Cheddar Scones (Leanne Brown, *Good and Cheap*)
- » Whole Wheat Molasses Yogurt Bread with Figs and Walnuts (Amanda Hesser, *Food52 Baking*)
- » Summer Spelt Almond Cake (Claire Ptak, *The Violet Bakery Cookbook*)
- » No-Knead 'Stealth' Bread (Robin Asbell, *The Whole Grain Promise*)
- » Kamut, Vanilla, and Chocolate Chip Cookies (Claire Ptak, *The Violet Bakery Cookbook*)
- » Almond Butter Brownies with Sea Salt (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- » Easy Wheat and Olive Oil Tart Shell (Maria Speck, *Ancient Grains for Modern Meals*)



### WHEAT BERRIES & ANCIENT WHEATS: EINKORN, EMMER/FARRO, KAMUT®, & SPELT

**Cook 1 cup dry grain with:** 2½–4 cups liquid (expands to 3 cups cooked grain)

**Cook Time:** Bring to boil, then simmer 25–40 minutes (some sources recommend soaking overnight)

**Best Uses:** Pleasant chew even when chilled, making it ideal for both warm and cold grain salads. Popular in sides and pilafs. Farro (also called emmer) is becoming popular in risotto ("farrotto").

**Flavor Profile:** Nutty and slightly sweet. Pairs well with nearly anything!

**Gluten-free? No**

**History:** These ancient strains of wheat were first domesticated along the Fertile Crescent, but were largely ignored after modern dwarf wheat became popular in the mid 20th century (with the advent of the Green Revolution). Einkorn is thought to be the most ancient of wheat varieties available today, with just two sets of chromosomes (instead of six, like modern wheat).

**Nutrition in 1 serving Kamut (¾ cup uncooked):** 160 calories, 5g fiber, 7g protein. Excellent source of manganese, selenium, and thiamin. Good source of magnesium, phosphorus, zinc, and copper.

**Recipe Ideas:**

- ▶ Crunchy Farro-Hemp Breakfast Bowl with Fresh Berries (Sharon Palmer, *Plant Powered for Life*)
- ▶ Farro with Clementines and Yogurt Dressing (Robin Asbell, *The Whole Grain Promise*)
- ▶ Chicken-Farro Salad (Andrew Weil, *True Food*)
- ▶ Roasted Acorn and Delicata Squash Salad with Wheat Berries and Bitter Greens (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ▶ Roasted Fall Vegetable and Cannellini Bean Stew with Speltz Berries and Kale (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ▶ Herbed Speltz Berry Salad with Peas and Feta (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ▶ Cinnamon-Soaked Wheat Berry Salad (Bryant Terry, *Afro-Vegan*)

### WILD RICE

**Cook 1 cup dry grain with:** 3 cups liquid (expands to 3½ cups cooked grain)

**Cook Time:** Bring to boil, then simmer 45–55 minutes

**Best Uses:** Chewy texture makes it great in grain salads and pilafs, or for adding heartiness to green salads and light dishes. You can even pop wild rice, like popcorn. Just heat it in a little oil and shake until it pops.

**Flavor Profile:** Aromatic, nutty flavor. Pairs well with brown rice, caramelized onions, squash, root vegetables, and mushrooms.

**Gluten-free? Yes**

**History:** Wild rice is one of the few whole grains native to North America; it originated in the area of the upper Great Lakes (in what is now both the U.S. and Canada). It is not actually related to rice, but is instead a wild grass. Traditionally, wild rice was harvested in canoes powered only by long poles, using beater sticks to knock the ripe seeds into the bottom of the canoes.

**Nutrition in 1 serving (¾ cup uncooked):** 140 calories, 3g fiber, 6g protein. Excellent source of magnesium and manganese. Good source of phosphorus, zinc, copper, niacin, and folate.

**Recipe Ideas:**

- ▶ Wild Rice and Lentil Salad (Ellen Ecker Ogden, *The Oldways Table*)
- ▶ Brown and Wild Rice with Brussels Sprouts (Giada de Laurentiis, *Giada's Feel Good Food*)
- ▶ Chicken, Wild Rice, and Corn Chowder (Ann Taylor Pittman, *Everyday Whole Grains*)
- ▶ Wild Rice Stuffing with Dried Cherries and Toasted Pecans (Ann Taylor Pittman, *Everyday Whole Grains*)
- ▶ Wild Rice Haystacks (Ann Taylor Pittman, *Everyday Whole Grains*)





## Cook a Protein-Packed Pizza

With so many individuals reducing their intake of gluten, it's important to know about gluten-free grains. Plus, there are almost twenty varieties with different flavors and textures to enjoy!

Let's try something different than baking pizza with a traditional dough. How about quinoa for a pizza crust? Not only can this "*Quinoa Pizza Recipe*" enliven a common pie, but quinoa is a rich and complete protein source.

Note: You will need to cook the quinoa to make this recipe. Cook time is 15 minutes. The recipe contains instructions if you need help with this step. You can even cook the quinoa in advance: measure what you need for the dough, freeze it, and then thaw it a day or two beforehand.

## Quinoa Pizza

Recipe Developer: Shannon Blair

### Dough Ingredients:

- 1 cup quinoa, uncooked and rinsed (or 3 cups prepared. Use step 2 in the directions below if you do not know how to cook the quinoa. Cook time is 15 minutes.)
- 4 eggs, beaten
- ½ cup low-fat shredded mozzarella cheese
- 2 teaspoons extra virgin olive oil
- 1 tablespoon and 1 teaspoon low sodium Italian seasoning of choice
- 1 teaspoon baking powder

### Toppings:

- ½ (14-ounce) jar pizza sauce of choice (I like the Prego brand)
- Low-fat shredded cheese of choice
- Your choice to additional toppings (examples: mushrooms, turkey pepperoni, spinach)





**Directions:**

1. Heat oven to 420.
2. Prepare quinoa if uncooked. Bring 2 cups of water to a boil, stir in 1 cup rinsed quinoa, cover, and simmer 15 minutes. Uncover, cook 5 minutes more on low or until water absorbed. Transfer onto a large plate, spreading out, to cool about 10 minutes.
3. Meanwhile, prep egg mixture and toppings.
4. For egg mixture, stir together the beaten eggs, extra virgin olive oil, seasoning, the  $\frac{1}{2}$  cup mozzarella, and baking powder. Stir cooled quinoa into egg mixture.
5. Pour onto a parchment paper-lined baking sheet. Press out into a  $\frac{1}{4}$ " thick rectangle.
6. Bake dough on middle rack 20 minutes.
7. Add toppings. Bake another 5 minutes. Broil, watching carefully, to brown the cheese.

Yield: 1 large pizza, about 16 rectangular slices

Note: Remaining sauce freezes and thaws well for future use. Freeze leftovers for power lunches and defrost in the microwave.



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## Post-Assessment

### Activity:

1. Look at the facts and details you wrote on your Pre-Assessment. Add anything new you learned about whole grains.
2. Choose a recipe that includes whole grains and make it. Try to pick something you have never made before. Ask an adult to help you, if needed.

### Optional:

3. Create a video (like a TikTok or Instagram Reel) of yourself after you cooked something with whole grains.
4. Include the following in the video:
  1. Identify the recipe you made and why you choose it
  2. The ingredients you used
  3. Your reaction and review of how it tastes
  4. Would you make this and eat it again?
  5. Would you add anything to make it taste better or do you like it as is?
  6. What are your thoughts on cooking with whole grains?
  7. Give it a thumbs up or thumbs down rating



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## Answer Key for Comparing Quaker Old Fashioned Oats to Kellogg's Froot Loops (page 21)

### Part 1 Questions

1. Oats: Whole grain rolled oats (only one listed). Froot Loops: Corn flour blend and sugar
2. Oats: more of both (nearly double)
3. Oats: zero added sugar and sodium. Froot Loops: almost 25% daily value, added sugar, and almost 10% daily value sodium. Both: same saturated fat levels
4. Oats: \$2.38 (13.2 cents per ounce). Froot Loops: \$3.98 (20.5 cents per ounce)
5. Oats: about 13. Froot Loops: about 14

### Part 2 Questions

1. Oats
2. Oats
3. Oats
4. Oats! It is okay to enjoy cereals like Froot Loops on occasion for a treat, but it is good to eat cereals more regularly like oats for more morning wins. Need inspiration? *The Super Healthy Kids web page* has several tasty ways with oats, hot or cold.



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## Answer Key to "Guess the Grains Matching Game" (page 23)

1. **Grain 1: Corn (note: corn on the cob not whole)**
  - a. Gluten-Free: Yes
  - b. Origins: The Americas, Native American Diets
  - c. Qualities: Sweet, Hard Kernel, Ground Meal
  - d. Common Uses: Cornbread, Popcorn
2. **Grain 2: Millet**
  - a. Gluten-Free: Yes
  - b. Origins: India, China
  - c. Qualities: Buttery, Small, Grit-like
  - d. Common Uses: Curries, Pilafs, Stir Fries
3. **Grain 3: Barley (note: pearled not whole)**
  - a. Gluten-Free: No
  - b. Origins: Fertile Crescent, Greek Roman
  - c. Qualities: Savory, Chewy, Rice-shaped
  - d. Common Uses: Rice Sub, Soups, Risottos
4. **Grain 4: Amaranth**
  - a. Gluten-Free: Yes
  - b. Origins: Latin America, Southeast Asia
  - c. Qualities: Peppery
  - d. Common Uses: Sweet and Savory Dishes
5. **Grain 5: Oats**
  - a. Gluten-Free: Yes
  - b. Origins: Northern European, Rainy Climates
  - c. Qualities: Sweet and Savory Dishes, Chewy
  - d. Common Uses: Porridge, Rice Sub, Cosmetics
6. **Grain 6: Rye**
  - a. Gluten-Free: No
  - b. Origins: Eastern European, Cold Climates
  - c. Qualities: Rich and Tangy
  - d. Common Uses: Baked Goods, Savory Dishes
7. **Grain 7: Wild Rice**
  - a. Gluten-Free: Yes
  - b. Origins: North America, Great Lakes
  - c. Qualities: Nutty, Chewy
  - d. Common Uses: Soups, Stuffing, Grain Salads
8. **Grain 8: Sorghum**
  - a. Gluten-Free: Yes
  - b. Origins: Africa, Drought Tolerant
  - c. Qualities: Sweet, Hints of Corn and Wheat
  - d. Common Uses: Baked Goods, Couscous Sub