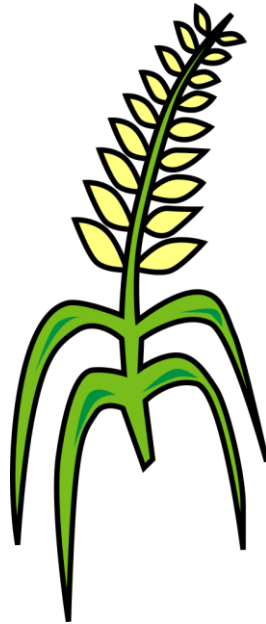


Food Science



Grains

Unit Handouts

“Whole Grains: The Inside Story” Article Questions

1. How many servings of whole grains does the USDA recommend is consumed each day? _____
 - a. How many servings does the average American consume? _____
2. According to the article, what is the strongest evidence that you should eat whole grains instead of refined grains?
3. Briefly explain the 4 studies on which this evidence is based:
 - a. _____

 - b. _____

 - c. _____

 - d. _____

4. Despite the research, the scientists are still not convinced that only whole grains made the difference? “People who eat whole grains tend to do a lot of other healthy things like _____ and _____.”
5. Some other possibilities of how whole grains may protect the heart include :
 - a. _____
 - b. _____
 - c. _____
6. Whole grains are also believed to help prevent diabetes? An Iowa study found that people who consumed at least _____ servings of whole grains per day had a ___ to ___ percent lower risk of diabetes than people who only ate one serving per week. Explain three reasons why this may be so:…
 - a. _____
 - b. _____
 - c. _____
7. Whole grains may have their biggest impact in the _____, where fiber helps keep things moving.
8. Whole grains are also believed to help prevent obesity because when people eat whole grains, they _____.
9. Which vitamins are added back when grain is “enriched”? _____, _____, _____, _____
10. List some of the other nutrients that are lost when flour is refined: _____, _____, _____, _____, _____, _____, _____, _____
11. Do you eat whole grain products at home? _____
12. If so, what are they?
13. In your own words, summarize what is said in the last page of the article, “The Bottom Line.” Why do you think it is important to pay attention to your whole grain consumption?

Whole Grains

The Inside Story



The average North American eats less than one serving of whole grains a day. Yet it would be hard to find a Canadian who doesn't know that people need to eat more of them.

But do Mr. and Ms. Average know why? Odds are, the reasons would surprise them.

Heart Disease

Why eat more whole grains?

"The strongest evidence is for cardiovascular disease," says Eric Rimm, an associate professor of epidemiology and nutrition at the Harvard University School of Public Health in Boston. For example:

- In the Iowa Women's Health Study of 34,000 women, those who reported eating at least one serving of whole grains a day had a 30 to 36 per cent lower risk of heart disease than those who reported eating no whole grains.¹
- In the U.S. Nurses' Health Study of 75,000 women, those who said they ate roughly three servings of whole grains a day had a 25 per cent lower risk of heart disease and a 36 per cent lower risk of stroke than those who said they ate no whole grains.^{2,3}
- In the U.S. Health Professionals Follow-Up Study of 44,000 men, those who reported eating at least 42 grams of whole grains a day—about three servings—had an 18 per cent lower risk of heart attack than those who reported eating less than 4 grams a day.⁴
- Among more than 200 women with heart disease in the Estrogen Replacement and Atherosclerosis Trial, those who ate more than six servings of whole grains a week had less artery clogging over the next three years than those who ate whole grains less often.⁵

Sounds like an open-and-shut case. But researchers aren't convinced that it was only whole grains that made the difference. "People who eat whole grains tend to

do a lot of other healthy things, like exercising and not smoking," explains Joanne Slavin, a professor of food science and nutrition at the University of Minnesota in St. Paul.

They also get less saturated fat and more vitamins. "We try to account for those things, but they still might confound our results," Slavin explains, because health-conscious people may do other things that scientists don't know about.

To try to nail down cause-and-effect, researchers look for a mechanism that would explain *how* whole grains might protect the heart. Among the possibilities:

- **Cholesterol.** Whole grains that are rich in water-soluble fibre—like oats and barley—lower LDL ("bad") cholesterol. "There's no question that if you feed people soluble fibre in large enough doses, you can lower their cholesterol," says Slavin.
- But most people—including all those nurses, health professionals, and Iowa women with a lower risk of heart disease—eat far less barley and oats than whole wheat, which is high in *insoluble* fibre. And wheat bran, one of the richest sources of insoluble fibre, doesn't lower cholesterol. Yet men who eat the most bran have the lowest risk of heart disease.^{4,6}

"If you look at the fibre data, it's clear that grains rich in insoluble fibre are also protective," says Slavin. "So you've got to look beyond cholesterol for an explanation."

- **Insulin.** In a small study, researchers fed 11 overweight adults with high insulin levels 6 to 10 servings a day of either

whole or refined grains. Fasting insulin levels were lower after six weeks on the whole grains than after six weeks on the refined grains.⁷

"Whole grains seem to improve insulin metabolism," says David Jacobs, a professor of epidemiology at the University of Minnesota who co-authored the study.

High insulin levels can raise the risk of both heart disease and diabetes. And a new study found a lower risk of the metabolic syndrome—which is linked to high insulin levels—in older people who eat whole grains.⁸

Nevertheless, says Slavin, "I wish we had bigger studies to prove that whole grains have an impact on insulin sensitivity."

- **Antioxidants, etc.** Whole grains are rich in antioxidants that may protect against tissue damage by scavenging marauding free radicals.

But "the antioxidant story has big holes," acknowledges Slavin. High doses of vitamin E, for example, don't prevent heart attacks. "It's possible that when you isolate antioxidants and take them in high doses, they don't work," she says.

Whole grains are also rich in a slew of other possibly protective substances, including plant sterols, lignans, phytates, vitamins, and minerals.

"Magnesium is probably the number-one mineral in whole grains that we need," says Slavin. "Potassium is another. Both are needed but aren't typically added to fortified foods." (See "White vs. Whole Wheat," p. 5.)

Which, if any, of those constituents may make whole grains heart-friendly is

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still an open question. “We need more research to pin down the mechanisms,” says Slavin.

Diabetes

Do whole grains prevent diabetes?

In the Iowa Women’s Health Study, the Nurses’ Health Study, and the Health Professionals Follow-Up Study, people who consumed at least three servings a day of whole grains had a 20 to 30 per cent lower risk of diabetes over the next decade or so than people who ate roughly one serving a week.^{2,9,10}

But it’s the heart disease story all over again. Researchers worry that something else about whole-grain eaters protects them.

“We try to eliminate those confounders, but it’s always possible that some are left over,” says Jacobs, “because people who eat whole grains have healthier behaviour overall.”

But he and others are encouraged by evidence for mechanisms that could explain why whole grains may prevent diabetes. Lower insulin levels is one possibility (see p. 3). Among the others:

■ **Fibre.** The soluble fibre in whole grains like oats and barley can keep carbohy-

drates from entering the bloodstream too quickly.¹¹

“Theoretically, if the absorption of carbohydrates were slowed, you’d have less stress on the pancreas, and insulin levels wouldn’t shoot up,” says Alice Lichtenstein of the U.S. Department of Agriculture Jean Mayer Human Nutrition Research Center on Aging at Tufts University in Boston.

But most whole grains (and wheat bran) are rich in *insoluble* fibre, which doesn’t slow absorption. “The quantities of soluble fibre we consume would have only a small effect on insulin,” Lichtenstein cautions.

■ **Glycemic index.** Many people assume that whole grains raise blood sugar levels less than refined grains (in other words, that whole grains have a lower glycemic index). However, what matters isn’t whether the grain is whole or refined, but whether it’s finely ground (like flour) or intact (like bulgur or brown rice).

“Whole-grain flour has nearly the same glycemic index as refined flour,” says Jacobs. “Intact whole grains have a low glycemic index.”

The bottom line: “This is a very preliminary area of whole-grain research,” says Slavin.

Bowel Function

“Whole grains may have their biggest impact in the bowel,” where fibre helps keep things moving, says Slavin.

For example, Australian researchers gave 28 overweight middle-aged men enough whole-grain wheat or rye (about 230 grams of bread, cereal, and crackers) to bring their fibre to 32 grams a day. (That’s about what experts now recommend, and about twice as much as the average man consumes.) Stool weights were higher than when the men ate low-fibre versions of the same foods (only 19 grams of fibre a day).¹²

“Insoluble fibre is beneficial for bowel function, which is a huge problem in North America,” says Lichtenstein.

Obesity

“When people eat whole grains, they feel full sooner, so they eat fewer calories,” says Slavin. “But could eating more whole grains help people lose weight? It’s never been tested.”

Women and men who consume more whole grains gain less weight over a decade or so than those who consume more refined grains.^{13,14} But the difference is only a pound or two.

And, once again, it’s not clear if whole grains cause less weight gain or if health-conscious people who eat whole grains also watch their weight.

“It’s difficult to study obesity because so many things contribute to it,” says Harvard’s Eric Rimm. “But there’s a growing body of evidence to suggest that whole grains are important, maybe just because they make people get full faster.”

Colon Cancer

If there’s one benefit people expect from whole grains, it’s a lower risk of colon cancer. But the evidence is shaky.

Some studies found a lower risk of colon cancer in people who ate more fibre from whole grains, fruits, and vegetables, but other studies didn’t. Then two clinical trials on people who had had precancerous colon polyps came up empty.

Researchers found no fewer new polyps in those who were told to eat more wheat bran or more fibre-rich grains, fruits, and

WHAT IS A WHOLE GRAIN?

BRAN

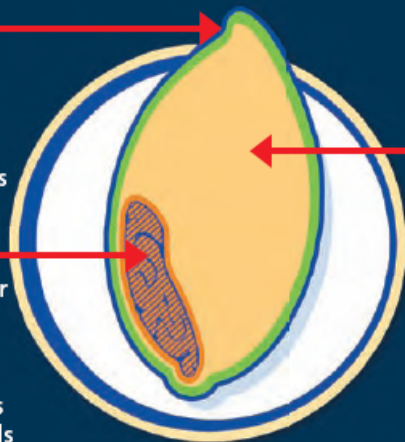
“Outer shell” protects seed

- Fibre
- B Vitamins
- Trace Minerals

GERM

Nourishment for the seed

- B Vitamins
- Vitamin E
- Trace Minerals
- Phytochemicals



ENDOSPERM

Provides energy

- Carbohydrate
- Protein
- Some B Vitamins

vegetables for three or four years than in those who ate their usual diets.^{15,16}

"It is clear that the high-fibre diet did not keep polyps from recurring, but what that means about fibre and colon cancer is less clear," says the University of Minnesota's David Jacobs.

The Bottom Line

Science aside, some experts are nervous that the food industry may oversell foods with just a smidgen of whole grains (see "The Whole Truth," p. 6).

"We get too little exercise and eat too much high-calorie food," says the University of Minnesota's Joanne Slavin. "Our diet is broken, and you can't fix it by adding a few grams of whole grains or fibre."

What's more, it's risky to urge Canadians to eat more food, especially snack foods, even if they are whole grain.

"When I see 100 per cent whole-grain cookies, I get worried," says Tufts University's Alice Lichtenstein. "We want to encourage a shift to whole-grain products, but I don't want to give people the impression that they should eat more snack foods."

"In a country where more than half of all adults are overweight or obese, people eat too much of everything already," she adds. "Do most people have the discretionary calories to fit a cheese Danish made with whole grains into their diets?"

Despite the uncertainties, most researchers are convinced that replacing refined grains with whole grains is wise.

"Without long-term, randomized clinical trials of whole grains and disease, I don't have proof that the benefits of whole grains are real," says Jacobs.

"But I am 100 per cent in favour of encouraging people to eat whole grains. I go back to the theory that phytochemicals as bundled in plant foods are good until proven otherwise."

And, experts note, there's no evidence that *refined* grains lower the risk of disease or obesity.

"Encouraging people to buy bread where the first ingredient is whole wheat clearly will do no harm," says Rimm.

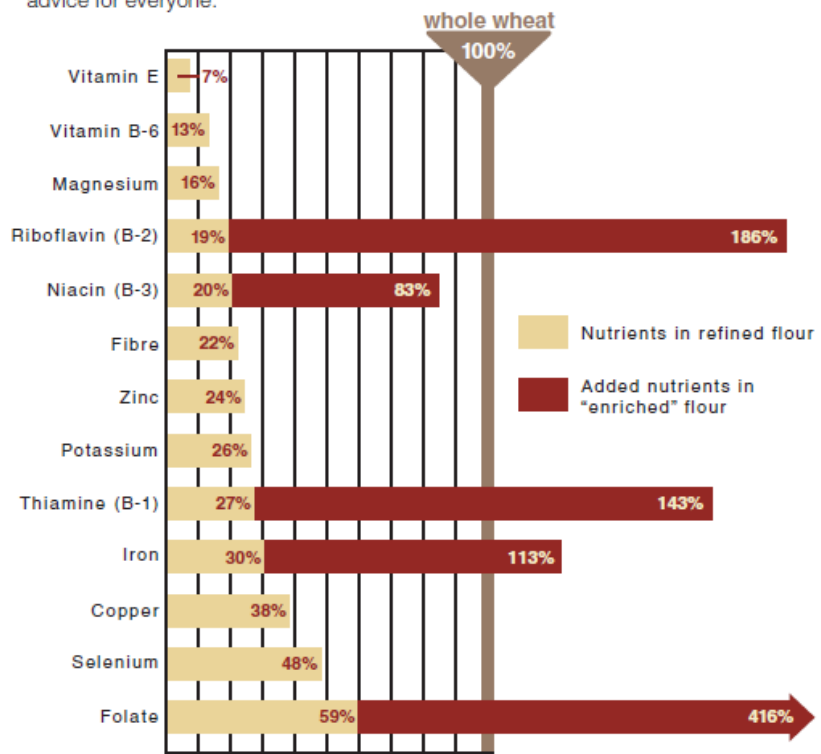
"And there's pretty strong evidence that it will be beneficial for heart disease and diabetes." 🍌

White vs. Whole Wheat

What do you lose when whole wheat is refined? Plenty. The gold bars show how little of 13 key nutrients remains. For example, refined flour has just 7 per cent of the vitamin E, 13 per cent of the vitamin B-6, and 16 per cent of the magnesium of whole wheat flour.

The red bars show the five nutrients that are added back to refined flour to make it "enriched." Whole wheat is clearly more nutritious than enriched flour, with one exception: enriched flour not only has more folate, but the added folate (folic acid) is absorbed better than the folate that occurs naturally in whole wheat flour. (The higher-than-whole-wheat levels of B-1, B-2, and iron in enriched flour aren't reason enough to pick enriched over whole wheat.)

Some experts recommend that women who could become pregnant eat a mix of enriched and whole grains to get enough folate to reduce the risk of neural tube birth defects. A smarter strategy: take a multivitamin to make sure you get enough folate, and eat whole grains to get fibre plus a raft of vitamins, minerals, and who-knows-how-many phytochemicals that may protect your health. That's not bad advice for everyone.



Graphic adapted from Oldways Preservation Trust and the Whole Grains Council (wholegrainscouncil.org).

¹ Amer. J. Clin. Nutr. 68: 248, 1998.

² Amer. J. Clin. Nutr. 70: 412, 1999.

³ J. Amer. Med. Assoc. 284: 1534, 2000.

⁴ Amer. J. Clin. Nutr. 80: 1492, 2004.

⁵ Amer. Heart J. 150: 94, 2005.

⁶ Diabetes Care 25: 1522, 2002.

⁷ Amer. J. Clin. Nutr. 75: 848, 2002.

⁸ Amer. J. Clin. Nutr. 83: 124, 2006.

⁹ Amer. J. Clin. Nutr. 71: 921, 2000.

¹⁰ Amer. J. Clin. Nutr. 76: 535, 2002.

¹¹ Amer. J. Clin. Nutr. 61: 379, 1995.

¹² Amer. J. Clin. Nutr. 77: 967, 2003.

¹³ Amer. J. Clin. Nutr. 78: 920, 2003.

¹⁴ Amer. J. Clin. Nutr. 80: 1237, 2004.

¹⁵ New Eng. J. Med. 342: 1156, 2000.

¹⁶ New Eng. J. Med. 342: 1149, 2000.

The Whole Truth

By Bonnie Liebman & Jayne Hurley

Whole Wheat Goodness

"Now with the Goodness of Whole Wheat," says the label of Wonder+ Enriched White Loaf. "That's the PLUS. All the fibre! All the calcium! And now 11 essential nutrients."

How much whole wheat does Wonder+ have? Zero. The bread apparently has whole wheat *goodness* instead of whole wheat.

To Weston Bakeries, the "goodness" of whole wheat apparently boils down to fibre. So the company adds oat hull fibre, an isolated fibre that may not confer the same benefits as the intact fibre in whole grains.

Maybe instead of dinner tonight you should just have the goodness of dinner by popping some oat hull fibre.

The Whole Truth: "With the goodness of" may mean "with none."



Whole grains are hopping. From breads and cereals to crackers, cookies, pasta, pretzels, and pizza, grain claims are sprouting up in every aisle.

The food industry is clearly bent on marketing more 100 per cent whole-grain foods, including frozen dinners, pizza, and side dishes (see photos above). But whole-grain claims can also confuse or mislead consumers. Here's the "whole" truth and nothing but....

The information for this article was compiled by Namita Davis in Toronto and Lauren Clark in Ottawa, with help from Tina Babouchian in Toronto.

Harvest Wheat

Kraft's Delissio Balance Harvest Wheat Rising Crust Pizza is "made with whole wheat flour," says the small print on the back of the box. But the crust has more refined "wheat flour" (and more water) than whole wheat.

According to the Canadian Food Inspection Agency, when a company puts words like "made with whole wheat flour" on a box, the label has to disclose the percentage of whole wheat in the food or prominently disclose (not just in the ingredient list) all the flours in the food, making clear which are whole grain and which aren't. Kraft does neither.

Don't get us wrong: a pizza crust with some whole grain is better than one with no whole grain. And Delissio Balance pizzas have less saturated fat than Kraft's regular Delissio pizza, thanks to ingredients like part-skim mozzarella cheese, reduced-fat pepperoni, grilled chicken, and roasted vegetables.

But people ought to know if their "harvest wheat" pizza crust is, say, 50 per cent—or only 5 per cent—whole grain. As the box says, Canada's Food Guide to Healthy Eating "recommends choosing whole grains...." Is this pizza whole grain or not?

The Whole Truth: "Wheat" often means refined. "Harvest" means "nice sounding word."



Made With

Kellogg's Nutri-Grain Cereal Bars are "made with whole grain oats and real fruit filling," says the box. But they're made with more refined flour and sugar than oats (and more sugar than fruit).

Dare Breton Original crackers are also "made with" whole wheat...just not very much. The crackers have more refined wheat flour, wheat germ, and oils (coconut plus modified palm and canola) than whole wheat flour.

The Whole Truth: "Made with" often means "made with very little."

Wheat is White

Kellogg's Eggo Plus Wheat & Blueberry Flavour Waffles deserve a C+. They've got more refined flour than whole wheat. (And their "blueberry nuggets" have more sugar, flour, corn starch, and hydrogenated vegetable oil than dried blueberries.)



Eggo Plus Fibre Waffles play the same game. They've got more refined than whole wheat flour (though Kellogg's does add three kinds of bran—wheat, oat, and rice). And they've got enough hydrogenated vegetable oil to endow each waffle with half a gram of trans fat.

And Christie isn't exactly lying when it boasts that its Original Wheat Thins are "baked with the goodness of wheat." The company is talking about the goodness of enriched (that means *refined*) wheat flour...with less than a gram of added wheat bran.

The Whole Truth: "Wheat" usually means white flour or white flour plus a little bran or whole wheat thrown in to make the food look whole grain.

Stoned Silly



To many people, "Stoned Wheat" crackers sound like "Whole Wheat" crackers. Yet there's more enriched (refined) wheat flour than (whole) cracked wheat in Kraft's Original Stoned Wheat Thins.

As it turns out, "stoned wheat" doesn't mean much of anything. According to *USA Today*, the term could mean that whole wheat berries were first cracked on stone mills and then ground to flour on rollers. But it could also mean that refined flour was passed over a stone after it was ground conventionally.

"Or it could mean it's just a nice name," says Jeff Gwirtz, technical services director of the International Association of Operative Millers. "It's more a conceptual, warm, touchy, crunchy feel."

The Whole Truth: "Stone ground" may mean nothing. To see which grains and flours are whole, check the ingredients. Refined grains include enriched wheat flour, unbleached wheat flour, rice flour, and durum wheat semolina. (Ignore refined flour that appears far down the ingredient list, near the salt. That means there's not much of it.)

Multigrain



President's Choice Blue Menu Wild Blueberry 10-Grain Muffins may have 10 grains. But they've got more enriched (refined) wheat flour, sugar, water, blueberries, and liquid egg-white than "10-grain mix" (it's really 10 grains and seeds). And some of those grains—the pearl barley, for example—are likely to be refined.

Multigrain claims are multiplying, as are claims that replace "multi" with a number (like 12-Grain). You'll find them on products like:

- President's Choice 7 Grain Multiseed Flatbread crackers, which are mostly unbleached (refined) wheat flour. Each three-cracker serving has less than 2 grams of a "grain blend" (spelt, rye, barley, triticale, oats, and flax), and there's no way to tell what per cent of the blend is whole grain.
- Christie Multigrain Vegetable Thins, which are "baked with real vegetables and wholesome grains." That would be mostly wholesome *refined* grains. (The "real vegetables" consist of a few grams of "dehydrated vegetable and seasoning blend.")
- President's Choice Blue Menu Multigrain Waffle Pretzels, which have more enriched (refined) wheat flour than a "multi-grain blend" of whole wheat plus four (probably) refined grains.

The Whole Truth: It doesn't matter if you're getting 5, 10, or 15 grains if those grains are mostly refined.

Bran Name

Peek Freans Lifestyle Bran Crunch biscuits are better than most. They're a "source of fibre" (2 grams in a three-cookie serving—about as much as 100% whole-grain cookies have).

What's more, their fibre comes from added wheat bran, which is better than added oat hull fibre or other isolated fibres.

But unlike these bran biscuits, some foods with "bran" in their names are made largely of enriched (refined) wheat flour with just a smidgen of bran.

The Whole Truth: Some "bran" foods have as much bran as whole-grain foods, but others have far less.



Cooked Cereal Grains - Evaluation

Grain/ Type	Information about the grain (from handout packet)	How long did it take to cook? (ask the people who cooked it)	Serving size and Nutrients in this grain	Describe Flavor and Cooked Texture (feeling in your mouth)
Rolled Barley			Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____	
Steel Cut Oats			Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____	
Rolled Spelt			Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____	
Kamut			Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____	
Creamy Buckwheat			Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____	

<p>7-Grain Cereal (contains wheat, rye, triticale, oats, barley, rice & flaxseed)</p>			<p>Serv. Size: _____ Fiber (g): _____ Protein (g): _____ Fat (g): _____ Iron (%DV) _____</p>	
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Write one paragraph summarizing the activity and the results. Which cooked grain was your personal favorite and why? Comment on flavor, texture, appearance, and ease/convenience of cooking.

Serious Cereal Grains

Without the grains grown on American farms, the cereal shelves would be empty (as would other shelves). Consumers and business owners alike need farmers to produce the raw ingredients to fill the factories, trucks and stores, and to provide jobs along the way (graphic designers for packaging, engineers in processing, food scientists, etc.). In fact, the person who designs the box for Tony the Tiger's Frosted Flakes® owes his or her livelihood to the fact that someone grows corn.

About one out of five, or 20 percent, of Americans rely on agriculture for employment. It's hard to imagine an empty cereal aisle at your favorite grocery store, and easy to forget that all of the cereals came from a farmer's field. Grains are simply the seeds or fruits of grasses. They belong to a group of grasses called cereals or cereal grains and include wheat, corn, rice, oats, rye, buckwheat, millet, sorghum (milo), barley, quinoa, amaranth, and triticale (a high-yield grain developed by crossing wheat for its gluten and rye for its hardness).

All grains have basically the same makeup. Each kernel, or grain, has a tiny "germ," or seed, at its core. It represents from 2 to 3 percent of the seed's weight and is the embryo from which new plants develop. The germ is surrounded by the endosperm – a storage packet of starch (a complex carbohydrate) – encased in protein to nourish the young plant in its early growth if the seed sprouts. Gluten is an elastic protein within the endosperm that stretches like bubble gum when wet and expands to hold the gas that yeast generates. Protecting the germ and endosperm is the bran, or hull – a tough, fibrous, hard covering.

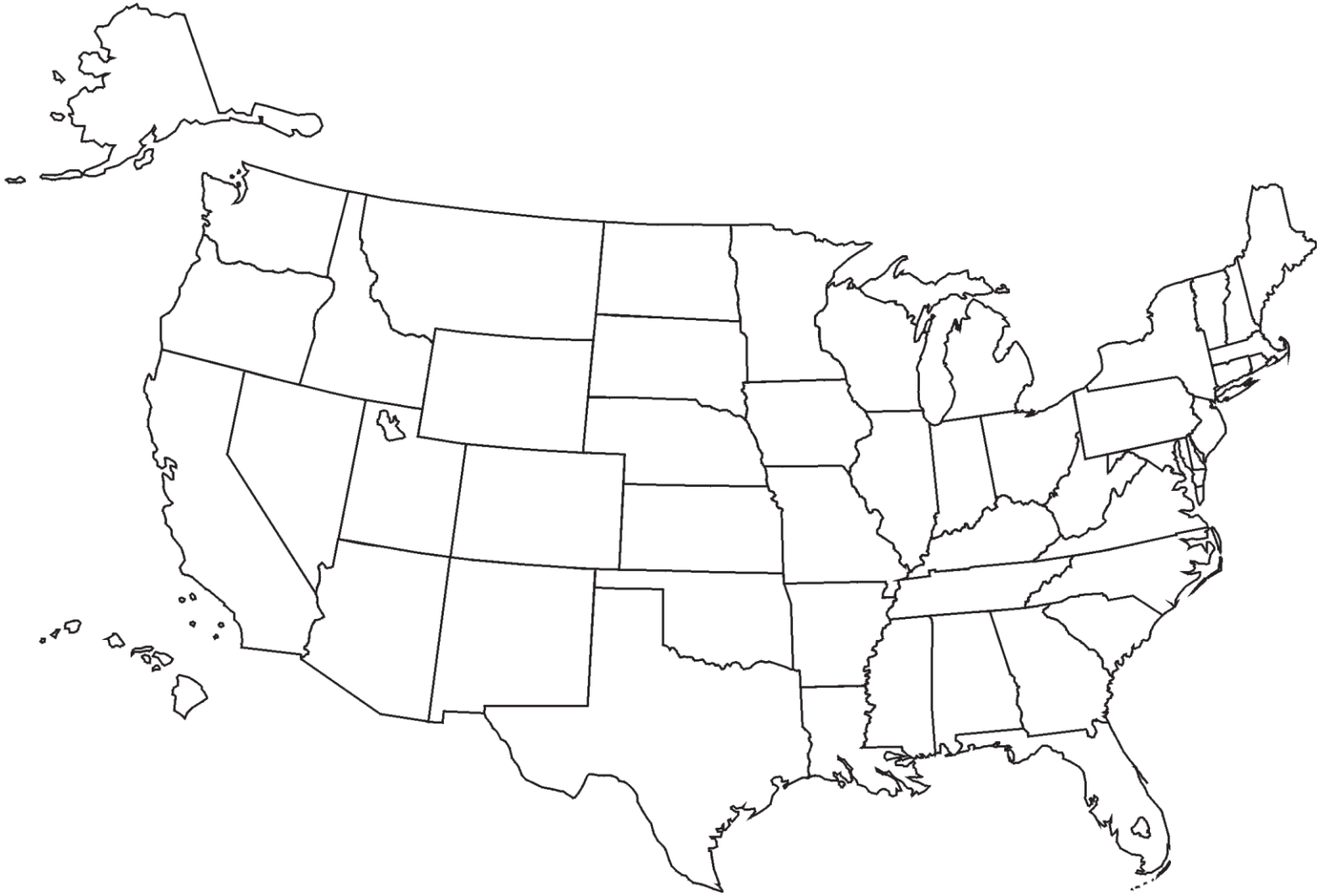
Grains are the primary raw material in bread. The kind of grain used largely determines the flavor, texture, and nutrition of the bread. Wheat, rye, oats, and barley were the primary grains in Europe during the Middle Ages. The principal grains grown in the world today are wheat, corn, and rice; these three provide more than half of the world's food from plants.

The science of cereal is serious business! Students interested in a career in cereal science are required to study basic science education: biology, mathematics, and physics. Further study in chemistry, food processing, engineering, microbiology, nutrition, milling, or plant science offers students a wide range of opportunities for careers in cereal processing, food science, foods and nutrition, organic chemistry, biochemistry, or agriculture. Education in the aforementioned field of cereal science may include two-year technical degrees, four-year bachelor of science degrees, or postgraduate degrees.

Job	Description
Wheat Breeder	
Cereal Chemist	
Agronomist	

Where My Cereal Grows

The majority of grains used in cereal comes from the “heartland” of America. Color a small circle on the legend and then color a small circle on the map to match the legend of the most productive grain states in the United States.



- Wheat:** Kansas, North Dakota, Montana, Washington, Oklahoma, and Idaho
- Corn:** Iowa, Illinois, Nebraska, Indiana, Minnesota, and Ohio
- Rice:** Arkansas, California, Louisiana, Mississippi, Missouri, and Texas
- Soybeans:** Iowa, Illinois, Indiana, Minnesota, Ohio Missouri

Breakfast Cereal Comparison

Record information from the Nutrition Facts panel of your choice of two ready-to-eat breakfast cereals in the spaces provided. Then answer the questions following questions.

Cereal A:	Cereal B:
Price:	Price:
Servings per container:	Servings per container:
Nutrition information per serving without milk	
Serving size:	Serving size:
Calories:	Calories:
Calories from fat:	Calories from fat:
Total fat:	Total fat:
Saturated fat:	Saturated fat:
Cholesterol:	Cholesterol:
Sodium:	Sodium:
Total carbohydrate:	Total carbohydrate:
Dietary fiber:	Dietary fiber:
Sugars:	Sugars:
Protein:	Protein:
Percent Daily Value	
Total fat:	Total fat:
Saturated fat:	Saturated fat:
Cholesterol:	Cholesterol:
Sodium:	Sodium:
Total carbohydrate:	Total carbohydrate:
Dietary fiber:	Dietary fiber:
Vitamin A:	Vitamin A:
Vitamin C:	Vitamin C:
Calcium:	Calcium:
Iron:	Iron:
Other nutrients	Other nutrients
List the first five ingredients shown on the label	

1. Which cereal is the most economical?
2. Which cereal is lowest in fat?
3. Which cereal is lowest in sodium?
4. Which cereal is lowest in sugars?
5. Which cereal is highest in fiber?
6. Which cereal is highest in vitamins and minerals?
7. Which cereal would you rank as most nutritious overall? Explain your answer.
8. Which cereal would you rather eat? Explain your answer.
9. What size portion of this cereal do you typically eat?
10. How does this portion size affect your evaluation of nutrition label information?
11. What type of milk do you pour on your cereal?
12. How does the milk affect the nutritive value of the cereal?
13. How much, if any, sugar do you add to your cereal before eating it?
14. How does added sugar affect the nutritive value of the cereal?

