

Amazing Grains Teaching Guide

Summary

Grains are the foundation of the food pyramid. This program is a quick trip through the world of grains from rice, wheat and corn to buckwheat, kasha, and quinoa.

Amazing **Grains** shows what grain is, why it's so good to eat, where it comes from, and how it gets from field to table. It travels around the world to show:

Rice—Probably the world's most eaten food. Viewers see traditional hand methods of planting as well as the high tech use of airplanes and lasers. Viewers learn about brown rice, instant rice, parboiled rice, basmati, and long and short grained rice.

Wheat—What are wheat berries and wheat germ? How can one grain make foods as different as angel food cake and noodles? What is yeast and how does it work? Why does bread rise? What is whole grain bread?

Corn or maize — What do all these have in common?

Gasoline, envelope glue, kitchen flooring, soft drinks, aspirin, shoe polish, and cosmetics? Answer: They are all likely to contain corn. Who eats those miles of corn that line highways in the corn belt?

Barley—The ancient world's main grain is used today mainly for animal feed and beverages.

Other grains explored include oats, rye, buckwheat, kasha, spelt, millet, amaranth, and quinoa.

Grain Guide

Amaranth

A mustard colored seed about the size of a poppy seed; not a true grain. It has a nutty, somewhat peppery flavor. To the Aztecs, Amaranth was food from the gods. High in complete protein, minerals, vitamin C. and beta carotene.

Barley

One of the oldest grains and still a staple of Middle Eastern diets. Humans made bread from barley long before they used wheat. Used in western countries mostly as animal feed and for beer and liquors. Most barley sold for food is pearled barley used in soups. Barley is "pearled" by polishing off the outer layers of bran.

Bleached Flour

The reason all-purpose flour is so white is that it's bleached. No residues remain in the flour after bleaching. The bleaching improves the flour's baking qualities. Unbleached flour is aged in order to improve its baking qualities. Unbleached flour gives a denser bread, sometimes called country or home-style.

Bran

The bran is the outer protective layer of grain. It contains most of the B vitamins, minerals, and fiber. The bran is usually removed during milling. Bran is often found in breakfast cereals.

Buckwheat

The fruit of a leafy plant belonging to the same family as sorrel and rhubarb. This nutritious food has a nutty flavor and is ideal for people allergic to the gluten in wheat. Used by Americans for pancakes, by Russians for blintzes, and by Japanese and Koreans for soba noodles. Sometimes called soroats or kasha.

Bulgur

Bulgur is whole wheat processed by steaming, drying and cracking the kernels. Bulgur maintains the nutritional values of whole wheat and is used in salads and pilafs.

Corn

Originally, the generic word for the most commonly grown grain. Com—or maize as it is widely known outside the United States—was developed by the Indian civilizations in both North and South America.

Americans eat sweet com as a vegetable. Its sugar starts turning to starch in a matter of hours after picking. Field or dent com is the farmer's cash crop. Most is used as animal feed with the rest used for breakfast foods, cornstarch, com oils and com syrup. Thousands of products from glue and gasoline to cardboard and baby powder contain corn.

Couscous

Couscous (pronounced coose-coose). like pasta, is made from *semolina*. Native to Morocco, the semolina is moistened with water and rolled into tiny pellets. These wheat bits are steamed, stirred, and steamed again until they form a soft and fluffy rice-like wheat.

Endosperm

The starchy material in grain that provide nourishment for the embryo and young plant. The wheat endosperm is ground into flour.

Enriched Flour

White flour is wheat that has been processed and whitened so that it loses its fiber, minerals, B vitamins, and flavor. Enriching (which is required by law) restores iron, three B vitamins (thiamine, riboflavin, and niacin) and adds folic acid. Enriched flour is the main ingredient in commercial bread not labeled as "whole wheat."

Flour

Flour is finely ground grain. Unless specified, flour refers to wheat flour. Bread flour is made from a hard wheat higher in protein. It is used for bread because it contains gluten, an elastic protein that captures the carbon dioxide from yeast. A softer wheat (lower in protein content) is used for pastry that has to be flaky. A very hard wheat called durum is used for pasta and noodles. All purpose flour is a combination of hard and soft wheats.

French Breads

Varieties of bread we call French, Italian, or Vienna are not made with a special grain. Each is a wheat bread whose character is shaped by how the bread is baked. They are baked with steam that condenses on the surface of the dough, hardening the starch to provide its characteristic crust. These breads are often baked directly on the hearth instead of in pans or molds.

Genetic Engineering

Selecting and breeding seeds that work best and excluding those that do not is not new to agriculture. Modern science allows genetic "tinkering" to be much more efficient than in the past. As Raymond Sokolov points out in *With the Grain*, "Put baldly, the grains we have today were engineered by biogenetic tinkerers who somehow came to understand what characteristics were essential for farming grass. The analysis that these late Stone Age people made without any knowledge of formal biology is probably the most revolutionary and profound set of thoughts in human history.

Grain

An edible seed that is a member of the grass family.

Germ

The embryo that, if planted, would sprout to form a new plant. The germ is the only part of the grain that contains fat. It is also rich in vitamin E and B vitamins. The wheat germ is not part of white flour. Wheat germ has a crunchy feel and nutty taste and can be purchased in supermarkets.

Gluten

A protein in the wheat *endosperm* that helps bread rise when yeast is added. Gluten is very plastic and traps the gas produced by yeast. Gluten makes leavened bread possible.

Groats

Whole crushed kernels that have not been milled, polished, or treated with heat. The groats of wheat are called wheat berries. Buckwheat is sometimes sold as groats.

Kamut

An ancient strain of wheat (not a hybrid) cultivated by the Egyptians during the time of the pharaohs. Kamut has about 40% more protein than wheat and is tolerated by many people allergic to wheat. Kamut flour is sold mainly in specialty food stores.

Kasha

Technically, a porridge made from buckwheat groats. More commonly, buckwheat itself as sold in groat form. Kasha has a nutty taste and can substitute for 6 wild rice in recipes.

Malt

A whole grain is soaked, during which some of its starch is changed into sugar. Grains are malted for making alcoholic drinks. Malt is also ground into a flour used for malted vinegar and malted milk.

Millet

A cereal grass used in Asia and Africa. Millet is rather bland tasting but can be used in puddings, breads, cakes, and cookies. Often sold in the U.S. as bird seed.

Oats

Originally a weed in between rows of wheat or barley. 95% of the world's oat crop is animal feed. Our "oatmeal" is made from rolled oats — oat groats that are steamed and flattened. Quick cooking oatmeal is made from groats that are cut into several pieces before steaming and are rolled into thinner flakes. Steel-cut, or Scotch oats are from groats that have been cut but not steamed and rolled.

Polenta

A porridge made from cornmeal. Once called com mush or Indian pudding.

Quinoa

Pronounced as "keen-wa", this pseudo-grain was grown by the Incas centuries ago. It is rich in complete protein, and many nutrients. Can work as a rice substitute but cooks in half the time.

Rice

Half the world's population eats rice three times a day. In Chinese, the words for rice and culture are the same. In Japanese the word for rice also means "meal."

Brown rice is the entire grain of rice with only the edible outer husk removed. Brown rice is nutritious, high in fiber, and has a rich, nutty flavor.

White rice, like white flour, is milled and enriched to restore some of the nutrients (but not the fiber) lost in milling.

Minute or instant rice has been pre-cooked and dried before packaging.

Parboiled rice is soaked underpressure, steamed, and dried. This helps the grains stay separate when cooked and retains more nutrients than white rice, but not as much as brown.

Risotto

An Italian rice dish made by slowly adding flavored stock into a mixture of rice that has been sauteed in butter. Risottos are often made with chicken, seafood, vegetables, or cheese. The Italian *Arborio* rice is traditional.

Rye

Rye, like oats, was first seen as a weed. Rye contains little gluten so 100% rye flour will not make a loaf of bread. Most rye bread today is at least 80% wheat flour. Bread can have as little as 2% rye and still be called rye bread.

Semolina

The "paste" used to make the highest quality pasta and couscous. Semolina is a meal made from hard, durum wheat. Most pasta is made of semolina, water, and a bit of olive oil.

Stone-ground Flour

Typical supermarket flour is made by crushing wheat with high-speed steel rollers. This steel grinding creates heat that strips away the germ and destroys some nutrients. Stone-ground flour is made by using two slowly moving stones to grind the wheat. More nutrients are retained with stone grinding.

Tortillas

Tortillas can be either "flour" or "corn" tortillas. Flour tortillas are more accurately described as "wheat" tortillas to indicate their grain source. Wheat tortillas have about three grams of fat, com only one. They differ in taste and texture but can be used interchangeably in recipes.

Wheat

A ton of wheat seeds will yield a crop of about 30 tons of wheat. Wheat ranks first in production among the world's grains and accounts for over 20 percent of all calories consumed by humans.

Wild Rice

One of the few foods native to North America. Wild rice isn't really rice, it's a grass that grows wild in marshy areas near lake Superior. Until the 1960s, it was harvested by hand from canoes mostly by Chippewas. Today, over half of all wild rice is farmed in paddy fields. In other words, it is cultivated rather than wild. Wild rice is difficult to grow and harvest so remains expensive.

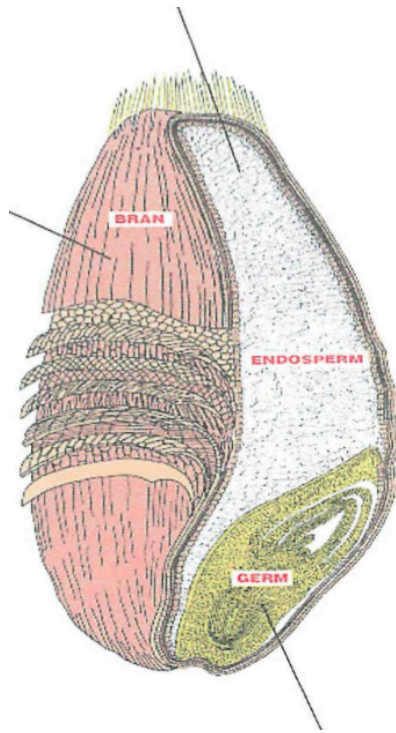
What's in a Grain of Wheat?

The endosperm is food for the germ. White flour is basically ground endosperm. The endosperm is made of starch and protein.

Several layers of bran cover the endosperm. The removal of the bran to make white flour is what makes "enrichment" necessary.

Writing in 19th century, healthy eating advocate Sylvester Graham (of Graham Cracker fame) condemned the separation of bran in milling as "putting asunder what God has joined together."

The wheat embryo is also called the "germ." Germ here relates to "germinate" rather than disease causing "germs." The germ if planted, would sprout to form a new plant. Wheat germ contains oil so spoils quickly and must be refrigerated.



Grains on the Internet

Grains Nutrition Information Center

<http://www.wheatfoods.org>

The Wheat Foods Council sponsors this site with educational resources about grains. Includes an FAQ section with questions such as "what is the best source of fuel for athletes, what's the difference between all-purpose flour and bread flour, and what's the difference between flour and corn tortillas?"

If you have any question about grain you can e-mail it and they will respond with a personal answer. Includes a Spanish version.

Pasta Information www.ilovepasta.org

Answers to questions about pasta from the National Pasta Association. Includes nutritional information and a guide to pasta names and shapes.

Kansas Wheat Commission

www.kswheat.com/factsht.html

Information sheets and educational materials on wheat foods. Information from recipes and nutrition to wheat allergies and sourdough.

Wild Rice Reference

www.greyowlfoods.com/goricestuff.html

Everything you wanted to know and more about wild rice. Presented by Grey Owl Foods, an Indian owned company.

Bibliography

All-American Waves of Grain: How to Buy, Store, and Cook Every Imaginable Grain by Barbara Grimes and Virginia Van Vynckt. Henry Holt and Company, NY, 1997.

A combination of 150 recipes and lots of history and background on grains from wheat to quinoa. This fine book is the most up-to-date we found on the subject of grains.

The Grains Cookbook by Bert Greene. Workman Publishing, NY, 1988.

Another combination of history (more personal and folksy) and wonderful recipes. Lots of "plain grain talk" and advice on how to cook and buy grains

The New Book of Whole Grains by Marlene Anne Bumgarner. St. Martin's Press, NY, 1997.

Updated version of 1976 classic on how to buy, store, and cook whole grains. Includes historical profiles of grains and nutrition information.

Food in History by Reay Tannahill. Crown Publishers, NY, 1989. This is one of the basic sources for any writing about the role of food in history. Even high school libraries should have a copy of this as reference.

On Food and Cooking by Harold McGee. Charles Scribner's Sons. NY, 1984.

This is another must have for any self-respecting library. Subtitled "*The Science and Lore of the Kitchen.*" McGee combines culinary lore with science and history. He covers all foods, not just grains.

With the Grain by Raymond Sokolov. Alfred A. Knopf. NY, 1996.

Elegant and opinionated study of grains and nutrition. Combines culinary and literary concoctions.