Wheat Fun Fact Sheet

Celebrate Wheat (Pre-3rd) was written to educate youth about the importance of wheat. This supplemental guide provides the basics of the wheat industry to help educate those who educate. This guide includes definitions, answers to frequently asked questions, fun facts, and additional resources for teachers to utilize in their classrooms.

What is wheat?

Wheat is a *grain*, which belongs to the grass family. A grain is defined as a plant that produces a dry edible seed, which is called a *kernel* or *berry*. Wheat produces a seed that is commonly called a kernel. Corn, grain sorghum, rice, oats, and rye are other examples of grains.

It is estimated that wheat was cultivated some 9,000 years ago in the Euphrates Valley, near what is now Iraq. Since then, wheat has been a staple crop around the world and today continues to be used as a nutritional food source and as a supply for many products.

Wheat — Feeding the World

Grain-based foods, like those produced with wheat, provide complex carbohydrates, which are the best fuel for our bodies, are low in fat, high in fiber, and provide vitamins, especially the 4 key B vitamins, Thiamin, Riboflavin, Niacin, and Folic Acid, as well as iron. Wheat provides us with a nutritious and delicious supply of breads, pasta, cereals, crackers, bagels, and many other food products that has wheat as an ingredient.

More than just Bread...

But, did you know that wheat is used in many other products that you use?

Straw particle board (wood) – used in kitchen cabinets
Paper
Milk replacer
Hair conditioners
Biodegradable golf tees
Adhesives on postage stamps
Water-soluble inks
Medical swabs
Charcoal
Biodegradable plastic eating utensils
And much more!

For a complete list of the alternative and industrial uses of wheat from Kansas Wheat, check out http://www.kswheat.com/general.asp?id=119 .

Where is wheat produced?

Wheat is grown around the world and adapts to a wide range of environmental conditions – from the Arctic Circle to tropic temperatures. However, today's high yielding varieties thrive in temperate areas with 10 to 30 inches of annual rainfall, which makes Kansas a perfect location for producing wheat!

In fact, on average, Kansas is the largest wheat producing state in the US. Nearly 20% of all the wheat produced in the United States is grown in Kansas. This is why Kansas is called the Wheat State or the Breadbasket of the World.

What is the difference between winter wheat and spring wheat?

Some wheat is *planted* and *sprouts* in the fall, lies *dormant* all winter, and then grows again in the spring to be *harvested* in early summer. These types of wheat are called *winter wheat*. Winter wheat grows best in areas where the winters are not too cold.

Other types of wheat are planted in the spring and harvested in the fall. These types of wheat are called *spring wheat*. Spring wheat grows best in the northern United States where the summers are not too hot for the young plants.

Winters in Kansas are not too cold for winter wheat, even though sometimes it feels like it to you and me! Kansas summers are too hot for spring wheat, so most producers in Kansas grow winter wheat.

What are the different classes of wheat? How does a farmer decide which type to grow?

There are 6 different classes grown in the United States that bring order to the over 30,000 varieties of wheat: Hard Red Winter, Hard Red Spring, Soft Red Winter, Durum, Hard White, and Soft White.

Pictured above is Hard Red Wheat kernels
Courtesy of the Wheat Foods Council

The class a variety fits into is determined by its hardness, the color of its kernels, and by planting time. Each class has its own uniform characteristics related to milling, baking, or other food uses.

Farmers choose a class of wheat to grow based on the climate and other conditions present where they farm. The majority of Kansas farmers grow Hard Red Winter Wheat.

A Year in the Life of a Kansas Wheat Field

September is wheat-planting time in Kansas. Wheat is planted with a *drill*, which is an implement that is pulled behind a tractor. The drill makes *furrows*. The furrow is open in the center, wheat seeds are dropped into the opening, and then the seeds are covered with a thin layer of soil.

Winter wheat sprouts and grows some during the fall, but becomes dormant after the first frost. Even though the plants are dormant, it is still important to check the plants to be sure they are healthy and are not being damaged by weeds, insects, or diseases.

The wheat begins to grow again in the spring. Wheat plants usually grow 2 to 4 feet tall. In early summer in Kansas, the green wheat plants start to gradually change color until they are a rich golden color by harvest.

The stalks and the wheat seeds must be dry so the plants can be cut easily and the seeds stored without spoiling. When the wheat is ready to be cut, the wheat plants are actually dead and drying up. When the wheat head starts to "nod," that's the sign to farmers it is time to cut the wheat! Harvest is an important time since wheat farmers receive their pay for a year's worth of work at harvest.

Wheat must be harvested at the right time. The right time is different for every part of the state. Typically, harvest starts in June at the southern border of Kansas. The wheat harvest spreads north and west. Wheat harvest ends in Kansas in early July at the Nebraska border and mid-July at the Colorado border.

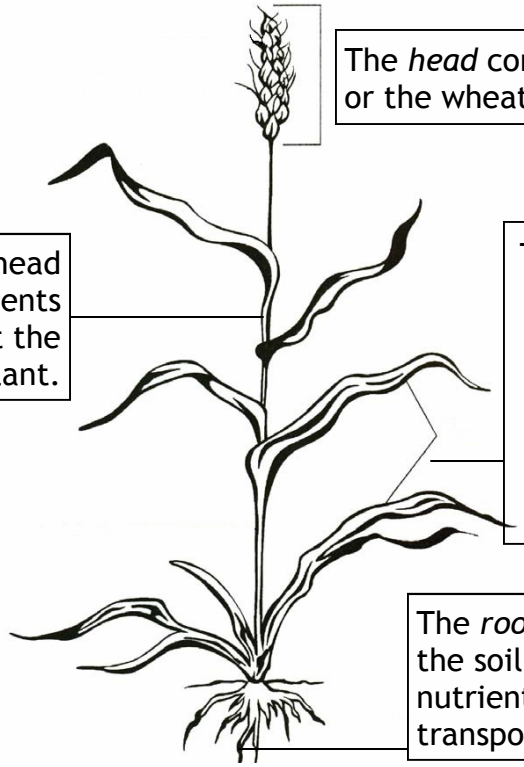
For thousands of years, entire fields were harvested by hand. The *sickle* was the common methods for cutting wheat and threshing was done by beating to separate the kernels. Some cultures still harvest wheat by this method. Today, in developed countries, wheat is harvested with a machine called a *combine*.

The combine cuts off the heads of the plants, shakes the wheat kernels out of the heads, and separates the kernels from all the other plant materials. The kernels are moved into a grain tank on the combine. All the extra plant material is blown out of the back of the combine and spread across the field. When the grain tank on the combine is full, the grain is deposited into a truck that drives the wheat to a grain elevator for storage.

Harvest is finished for this year, but the work is not done for farmers! It is now time to prepare the field for planting wheat in just 2 or 3 months.

After the wheat kernels are harvested and farmers have sold their wheat, the *milling* process begins. Milling takes the raw wheat kernel and grinds it into flour. Modern technology allows millers to use machinery to grind kernels into flour. The flour is then delivered to bakeries or is sacked and sold to consumers.

Investigating the Different Parts of a Wheat Plant & Their Functions :
The wheat plant has 4 basic parts: the head, stem, leaves, and roots. Each serves a different purpose for the wheat plant. Wheat plants grow to be about 2–4 feet tall.



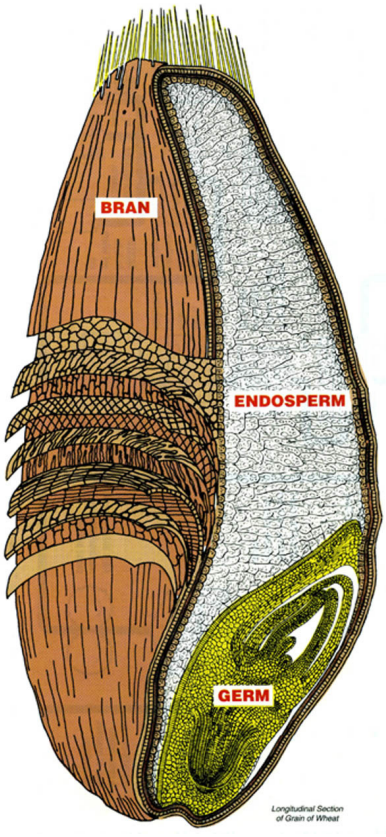
The *head* contains *kernels*, or the wheat seeds.

The *stem* supports the head and helps transport nutrients and water throughout the plant.

The *leaves* are responsible for *photosynthesis*, the process in which green plants produce simple carbohydrates by using carbon dioxide, hydrogen, and a light source, usually the sun.

The *roots* anchor the plant in the soil and absorb water and nutrients from the soil and transport them to the stem.

Graphic Courtesy of
the Wheat Foods Council



Kernels of wheat are small, so this picture is enlarged so it can be seen clearly. There are 50 kernels in one head of wheat and up to 17,000 kernels in just 1 pound!

The kernel is the seed from which the wheat plant grows. It is also the part that humans and livestock eat. The kernel has 3 distinct parts: the bran, endosperm, and germ. These 3 parts are separated during the milling process to produce flour.

The *endosperm* makes up 83% of the kernel weight. It is the middle layer and contains mostly protein and carbohydrates with small amounts of B vitamins, iron, and soluble fiber.

The *bran* contributes 14 ½% of the kernel weight. It can also be purchased separately. It is the outer layer and contains the largest amount of insoluble fiber, B vitamins, trace minerals, and a small amount of protein.

The *germ* is only 2 ½% of the kernel weight. The germ is the embryo, or the sprouting section of the seed. The germ is the inner part of the kernel and is a rich source of trace minerals, unsaturated fats, B vitamins, antioxidants, and a minimal amount of high quality protein.

What is the difference between whole wheat and white bread?
Both whole wheat and white breads are made from wheat.

They may taste differently and have different textures since different varieties of wheat are used in production.

Did you know?

The enrichment of white bread and rolls was made mandatory by the Federal government in 1941 as a war measure to improve nutrition. After the war, enrichment became voluntary, but many millers still continue the practice today.

White flour is produced by removing the bran and germ portions of the kernel. The endosperm is then finely ground to create white flour. Ninety-five percent of products made from white flour are *enriched*. This means nutrients are replaced that are lost during the milling process. Enriched grain products, such as enriched white bread, are a good source of iron, B vitamins, and complex carbohydrates.

Whole wheat bread and whole wheat products are made with the whole kernel of wheat. Whole grain bread and whole grain products doesn't necessarily mean 100% wheat. The term whole grain means all 3 parts of the kernel are used, but the grain used could be wheat, corn, oats, barley, or a combination of a number of different grains, such as in multi-grain breads and products.

Nutrition experts suggest that at least half of our daily grains come from whole grain products. The total number needed depends on age, gender, and activity level. Refer to myPyramid.gov to determine how many grains you need each day to be healthy.

Is bleached white flour harmful?

No, there are no residues remaining after bleaching. The Food and Drug Administration (FDA) permits the use of specific additives that have a maturing effect on the flour that improves baking qualities as well as bleaching the flour. Flour that has been processed this way must be labeled as bleached flour.

How much wheat does one acre produce?

In the U.S., one acre of wheat yields an average of 37.1 bushels of wheat.

One bushel of wheat yields 42 commercial loaves of white bread.

One acre of wheat can produce more than 1,500 loaves of bread.

An acre is almost the size of a football field or 43,560 square feet.

Resources:

There is a wealth of resources available to learn more about wheat. Visit these websites to jump start your learning.

Kansas Wheat
www.kswheat.com
Resources include information for buyers, processors, producers, consumers, as well as free educational materials.

Kansas State University Research and Extension Wheat Page
www.oznet.ksu.edu/WheatPage/
Watch a wheat field grow throughout a year, extension publications, and more.

Wheat Foods Council
www.wheatfoods.org
"Just For Kids" interactive web activity, Urban Wheat Field Experience, resources, and recipes.

National Association of Wheat Growers
www.wheatworld.org
Current wheat related news stories, issues, and information for wheat growers.

North American Millers' Association (NAMA)
www.namamillers.org
"Kids Zone" with video, images, and resources for students plus resources and information about milling grains.

Cyber Space Farm, sponsored by Kansas Women Involved in Farm Economics (WIFE)
www.cyberspaceag.com
Visit a Kansas wheat farm, view photos, and explore the history of wheat.

The next best thing since sliced bread …

Before 1930, bread was sliced by hand!

Provided by Kansas Farm Bureau to educate young people, parents and teachers about where our food comes from. America's food supply is safe, affordable and abundant but also vastly misunderstood by the consuming public.
It is the intention of Kansas Farm Bureau to improve the public's knowledge about the importance farming and ranching plays in our quality of life.

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