

CORN in the classroom

Corn in the Classroom Glossary:

Kernel: seed of the corn plant. Corn seeds have a hard outer shell and a starchy inside.

Cob: the part of the corn plant that holds the kernels together. One cob may have 800 kernels attached to it.

Ear: is considered the “fruit” of the corn plant. The ear forms within many layers of leaves known as husks. Pollen from the tops, or *tassels*, of the corn plants fall onto the corn silks. Once the pollen travels down the silk, a kernel is formed. One corn plant usually only grows one or two ears of corn kernels.

Bushel: the unit corn is measured in. A bushel is equivalent to 56 pounds, roughly the size of a large bag of dog food.

Acre: a unit of measurement for land area. An acre is 4,840 square yards, or slightly less than the size of a football field.

Combine: a large machine that harvests grain crops. This one machine cuts down the stalks, removes the ears from the stalks, removes the kernels from the ear and distributes stalks back on the field for fertility and ground cover. The combine also collects the kernels in its storage bin until it can be emptied into a wagon.

Field Corn: type of corn most commonly grown for animal feed and ethanol production. It can also be used in human food once it is processed. The starch and oil from a field corn kernel can be used in many different non-food products. 99% of the corn grown in the U.S. is field corn.

Sweet Corn: type of corn that is harvested when the kernels are still moist and the stalks and leaves are green. Sweet corn is eaten on or off the cob.

Popcorn: type of corn that has a very hard outer shell. This shell helps the popcorn kernel retain moisture. When the kernel is heated, the moisture not only cooks the starchy inside, but turns to steam and causes the kernel to “pop” open.

Corn Syrup: a sweet liquid made from corn starch. It can be found in a number of food items and beverages in place of sugar. It has the same nutritional content as sugar.

Ethanol: a type of alcohol that can be made from corn or other starchy plants. The alcohol can be used as a fuel for cars and trucks. This type of fuel is good for the environment because it reduces air pollution when used in place of gasoline.

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Corn Facts:

- Average corn yield per acre has risen from 20 bushels in 1912 to nearly 159 bushels in 2013.
- Only 11 percent of U.S. corn acres are irrigated. The remaining corn acres rely solely on rainfall.
- Farmers grow five times as much corn as they did in the 1930s – on 20 percent less land.
- Today, farmers produce 87 percent more corn per ounce of fertilizer thanks to innovative farming practices.
- In 2013 the U.S. produced 13.3 billion gallons of American-made ethanol. That means the ethanol produced in 2013 displaced an amount of gasoline refined from 462 million barrels of imported crude oil, which is the equivalent to that imported annually from Venezuela and Iraq combined.
- We produce enough corn that we can export one in every five rows of corn each year.
- Reduced tillage and other farm management practices have reduced soil erosion 67% in the last few decades.
- Individuals or families own 95% of U.S. corn farms. Another 5% are family-held corporations.
- In 2013, the U.S. ethanol industry added \$44 billion to the nation's Gross Domestic Product (GDP).



Frequently Asked Questions

Q. What's the largest grain crop?

A. In the U.S., the number of bushels of corn produced measures more than double that of any other grain crop. And U.S. researchers have led the way in finding many uses for corn like vitamins and amino acids.

Q. What's the primary use for corn?

A. Corn serves as a primary livestock feed source. A bushel of corn fed to livestock produces 5.6 pounds of retail beef, 13 pounds of retail pork, 19.6 pounds of chicken or 28 pounds of catfish.

Q. What's the difference between popcorn and other corn varieties?

A. The composition of the kernel distinguishes popcorn from the other varieties. Corn in general is comprised of carbohydrates (mainly starch), protein, fiber, corn oil and moisture. Water is stored in a small circle of soft starch in each kernel. As the kernel is heated, the water heats, builds up pressure and takes up any available room. The hard surface surrounding the starch resists the water pressure for as long as it can until the outer surface gives way and the water explodes into the fluffy white snack we love.

Q. How many kernels in a bushel of corn?

A. An ear of corn averages 800 kernels in 16 rows. A pound of corn consists of approximately 1,300 kernels. An acre of corn yielding 100 bushels produces approximately 7,280,000 kernels.

Q. Where is the Corn Belt?

A. Iowa, Illinois, Nebraska and Minnesota account for over 50 percent of the corn grown in the U.S. Other major growing states are Indiana, Wisconsin, South Dakota, Michigan, Missouri, Kansas, Ohio and Kentucky. This area is known as the "Corn Belt."

Q. What does corn have to do with soft drinks?

A. Corn is one of America's favorite sweeteners. Every major non-diet soft drink on the market uses high fructose corn syrup as a sweetener. Many powdered drinks, like lemonades and fruit drinks, use crystalline fructose made from corn. Studies have determined high fructose has the same nutritional value as sugar and are indistinguishable to the body.

Q. Where is corn grown?

A. Farmers grow corn on every continent, except Antarctica. Hybrid varieties of corn have been developed to adapt to specific growing conditions and locations worldwide.

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Q. Other than corn on the cob, how is corn used?

A. Unlike the sweet corn we eat, field corn has thousands of everyday uses. One hundred years ago, starch was basically the only product coming from corn refining - the rest of the kernel was thrown away. Today, there are uses for every part of the kernel and even the water it's processed in. Examples of industrial uses of corn:

- 1) A substitute for phosphate, corn-derived citric acid increases the cleaning power and decreases the volume of laundry detergents needed.
- 2) Several companies offer "packing peanuts" made of nearly 100 percent corn.
- 3) Corn-based ink is now replacing printer's ink that was made from 100 percent petroleum products. This product makes it safe for placemats and packaging where ink may come in contact with food.
- 4) Hydrosorb, a super absorbent cornstarch, was discovered in one of the U.S. Department of Agriculture's regional laboratories. It absorbs 300 times its weight and is used in some baby diapers and automobile fuel filters.

Q. How is corn used in paper?

A. Nearly every single sheet of printing paper uses cornstarch to improve printability. It is also used in the production of paper packaging materials such as corrugated cardboard. Each ton of paper produced uses 28 pounds of cornstarch.

Q. How many uses are there for corn?

A. There are more than 4,000 different uses for corn products and more uses continue to be found. Many of the new products, like paints, are more environmentally friendly than their petroleum counterparts.

Q. What is sweet corn?

A. Sweet corn is the type of corn you're most likely to grow in your garden. Corn-on-the cob, canned corn and frozen corn all come from sweet corn.

Q. What's the difference between sweet corn and field corn?

A. Corn-on-the-cob and canned or frozen corn at the grocery store come from sweet corn. The corn you grow in your garden also is a variety of sweet corn. But the most abundant type of corn grown in the United States is actually field, or dent, corn. Almost all of the corn you see in farm fields is dent corn.

Unlike sweet corn, dent corn has a hard outer portion about the thickness of your fingernail. The inner portion of the corn kernel is soft and floury. Dent corn is used to make starches, oils, livestock feed, ethanol fuel and many other products like crayons, paints and paper. Dent corn also is used to make corn syrup sweeteners and other ingredients that appear in all kinds of foods from soft drinks to baked goods.