



# CORN CONNECTION

*Be Ag Smart! The Corn Connection* has been developed and produced by Texas Farm Bureau Agriculture in the Classroom

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Teachers—For lesson plans, videos and other resources for your classroom, go to [texasfarmbureau.org/aitc](http://texasfarmbureau.org/aitc)

## WAYS CORN IS USED

Corn has more than **4,200** uses, including products we use on a regular basis. From traditional uses, such as feed and food, to the arenas of ethanol and bioplastics, corn is a vital part of our way of life.



### CORN FOR FOOD

According to the Corn Refiners Association, nearly 4,000 food items in your grocery store contain corn ingredients—and that doesn't include the products that come from corn-fed animals or the sweet, whole-kernel corn that's available on the cob, in cans or frozen. While sweet corn only accounts for about 1% of corn production in the United States, 10% of field corn is processed for food ingredients. This processed corn is used in a variety of foods, including fruit snacks, Oreos, chocolate milk, graham crackers and ice cream! It's safe to say that every time you sit down for a meal, corn is on the table.



### CORN FOR INDUSTRIAL USES

Corn can be found in a number of industrial applications, such as bioplastics and fabrics. Because of advances in technology, you can find corn in a number of items, including crayons, compostable tableware, food containers, shirts and carpet. These bioplastic items are made from cornstarch. Some farm equipment is even being made from corn!



### CORN FOR FUEL

Domestic ethanol producers are turning corn into environmentally friendly, renewable fuel. This clean-burning, high-octane fuel contributes to the country's energy independence. Henry Ford first thought of using corn as fuel.

**How tall is a corn plant?**

**Typical:**  
5 to 12 feet

**Typical in Texas:**  
6 to 8 feet

## HAVE YOU EVER WONDERED?

### Why does popcorn pop?

Each kernel has some starch in it. When it gets hot, the moisture turns to steam. That steam makes it explode, flipping the popcorn inside out.

### How long has popcorn been around?

For a very long time! Native Americans ate popcorn and used it as decoration for ceremonial headdresses, necklaces and ornaments.

### Is popcorn really healthy?

Yes! It is a grain, so it gives our bodies carbohydrates. In other words, we get energy from popcorn.



Although there is an increasing number of uses for corn, feeding livestock remains the primary use for American corn. About 96% of corn produced in Texas is used for livestock feed. Nationally, livestock and poultry directly consume about 40% of the country's corn crop in addition to a significant amount of corn by-products, such as distillers grains. Corn-fed animals gain weight quickly from corn's high-starch, high-energy content, making corn and distillers grains a preferred feed choice of feedlot operators. Additionally, corn improves the milk production of dairy cows and reduces the amount of land needed to support their feed requirements.





# BE A CORN DETECTIVE

Unscramble the words to learn what foods corn can be found in.

nroc sekalf      c\_\_\_ f\_a\_\_\_  
 cei earcm      \_c\_ \_\_\_m  
 oads      s\_\_\_  
 nuteap ttreub    \_e\_\_u\_    \_u\_\_e\_  
 upchket      k\_\_\_h\_\_\_  
 alads ingsserd    s\_l\_d    \_\_e\_\_\_g  
 ylelj      \_e\_\_\_  
 mallmarowssh    \_a\_s\_\_\_l\_\_s  
 tcoa hipcs      \_a\_o    \_\_i\_\_

Answer key on back page



## NATIVE AMERICANS DISCOVERED THE MANY USES OF CORN

Mayan, Aztec and Inca Indians of Central and South America learned to use almost every part of the corn plant. They were not only the first to discover corn but also the first to experiment with its many uses. Immature corn was eaten as a fresh vegetable. The dry, mature kernels of corn were ground into flour, parched or popped. Native American Chief Massasoit made a necklace out of popcorn to give to the Pilgrims as a gift. They would use the dried husks to make baskets, shoes and even corn husk dolls. The silks of the plants could be used as doll hair. The corn cobs were burned for fuel or made into ceremonial rattling sticks.



## CORN PUTTY

Play with it like clay. Then watch it become liquid again.

### Ingredients:

- 1 cup cornstarch
- 1/4 cup Food coloring

### Instructions:

Blend mixture with fork. It should flow when the bowl is tipped but feel solid when you touch it. If it's too thick, add a little water. If it's too runny, add a little cornstarch.

## TYPES OF CORN

**Sweet Corn** is the type of corn people grow in their vegetable gardens. Sweet corn is the corn on the cob, canned and frozen corn that people eat. Sweet corn can be grown year round in warm-weather climates. The ears are harvested before the seeds begin to harden.



**Field Corn**, also known as dent or feed corn, makes up more than 90% of the corn you see growing in the fields. It is hard on the outside and starchy on the inside. While most often considered a food for animals, it can be found in products you use every day!

**Popcorn** is a special type of corn that retains water within the kernel. When the kernel is heated, the water also heats and builds up pressure. This pressure causes the kernel to turn inside out, and then you have hot, fluffy popcorn!



## DID YOU KNOW?

### How many ears grow on a corn plant?

The number of ears grown on a plant is based on its genetics. Most Texas corn is bred to develop one large ear and one smaller ear.

### How many rows are there on an ear of corn?

The average corn ear has 16 rows. Corn ears always have an even number of rows.

### How many kernels are there on an ear of corn?

A typical ear has about 800 kernels, but this number can vary from 500-1,200 kernels.

### Why are there silks on corn?

Corn silks are necessary for pollen from the tassels to fertilize the plant. Silks will concentrate pollen to a developing ear of corn. Every kernel on a plant will have a silk connected to it. In harsh, hot summers, the silks can dry out before all the sites on a cob are fertilized, creating gaps where no kernels are developed.

### How big is an acre?

One acre is 4,840 square yards or 43,560 square feet—about the size of a standard football field.

### How big is a bushel?

Every crop is measured in bushels, or weight. A bushel of shelled corn is 56 pounds—about the size of a large bag of dog food.



# PLANTING CORN



Corn is planted when the soil is warm enough to germinate the seeds, but not so early that the young plants are likely to be damaged by frost. With so many diverse climates across our state, planting dates vary by geographic location. Texas' planting season begins as early as the beginning of February and ends as late as mid-June.

## Technology in Planting Corn

Farmers use large machinery called a planter that is pulled by a large tractor. The tractor is equipped with technology that connects with the planter and tells the farmer information such as how many seeds are planted in a field, how far apart the seeds are planted, and much more!



# TEXAS CORN PRODUCTION



On average, Texas plants 2 million acres that yield an average of 120 bushels per acre. Statewide, Texas produces more than 301 million bushels of corn. Irrigated corn produces about 65% of the state's corn crop, while only 40% of planted corn in Texas is irrigated. Texas corn production contributes about \$1.2 billion to the state's economy.

## Technology in Corn Production

Irrigation is a technique used by farmers to water their crops. Irrigation systems are highly advanced and can be controlled by an app on the farmer's phone.



# HARVESTING CORN



Corn is harvested when the plant has reached physical maturity. Similar to planting season, harvest time depends greatly on geographic location, as well as weather conditions. Additionally, different corn hybrids take different lengths of time to reach maturity. Harvest can start as early as July and as late as November.

## Technology in Harvesting Corn

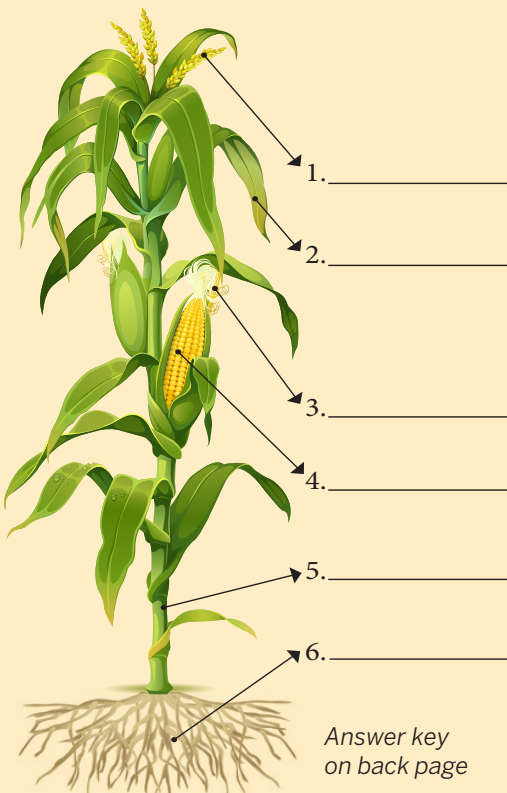
The harvest process is done completely with technology used in a machine called a combine. Much like the tractor used for planting, the combine utilizes GPS technology to keep it moving in the correct direction at all times. The technology in the combine also tracks the yield, or how much of the crop is harvested.



# ALL ABOUT CORN

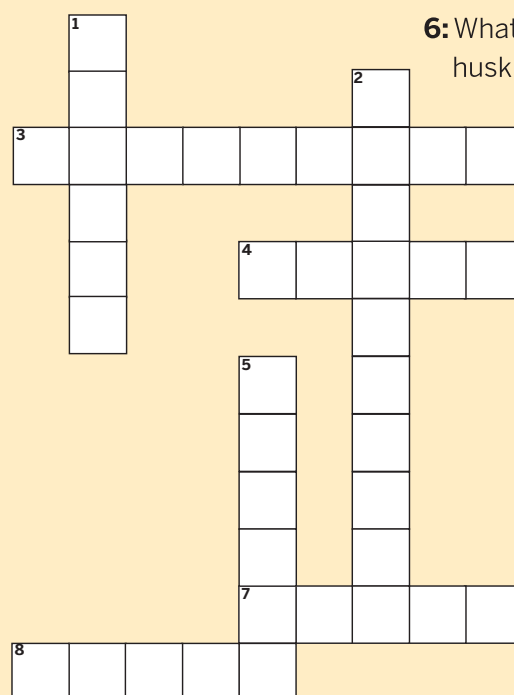
Can you identify the parts of a corn plant listed below?

- Stalk
- Leaf
- Tassel
- Silks
- Ear
- Roots



Answer key on back page

# CORN ROWS & COLUMNS



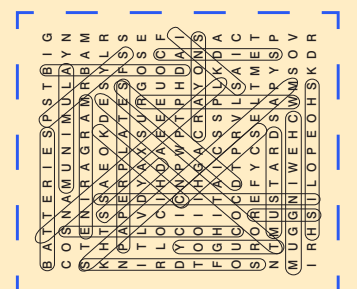
## ACROSS

- 3: Native American chief who presented popcorn necklaces to the Pilgrims.
- 4: Sweet to eat and something you collect at Halloween.
- 6: The corn product used as a sweetener.
- 7: Fuel made from corn.
- 8: Corn is a member of what plant family?

## DOWN

- 1: Something a baby wears on its bottom.
- 2: Corn product used in biodegradable plastics.
- 5: Part of corn plant that receives energy from the sun.
- 6: What part of the corn plant can be used as hair on husk dolls besides the husk?

## WORD SEARCH ANSWER KEY



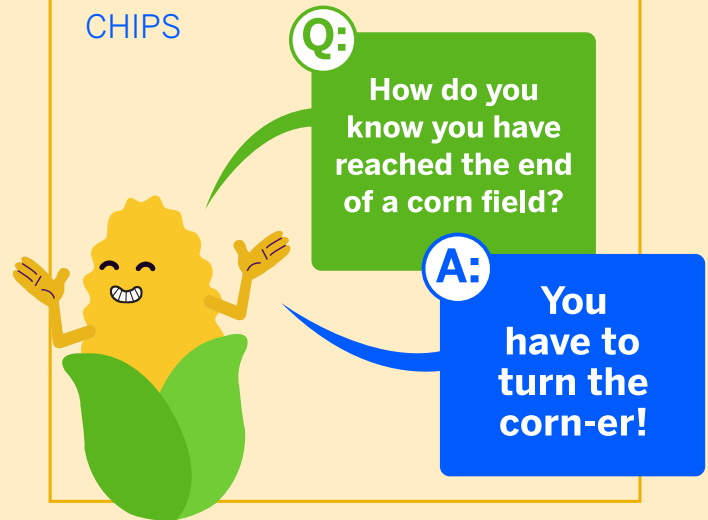
Answer key on back page

# CORNY WORD SEARCH

B A T T E R I E S P S T B I G  
 C O S N A M U N I M U L A Y N  
 S T E N I R A G R A M R B A M  
 K H T S S A E O K D E S Y L R  
 N P A P E R P L A T E S F S S  
 I T L V D Y A X S U R G O S E  
 R L O C I H D A E E E U O C F  
 D Y C I C N P W P T P H D A I  
 T O O I I H G A C R A Y O N S  
 F G H I T A I C S S P L K D A  
 O U C O C D T P R V L S A I C  
 S R O R E F Y C S E L T M E T  
 N T M U S T A R D S A P Y S P  
 M U G G N I W E H C W M S O V  
 I R H S I L O P E O H S K D R

Answer key on page three

- RUGS
- CHALK
- MUSTARD
- TOOTHPASTE
- CHOCOLATES
- INSECTICIDES
- CHEWING GUM
- CRAYONS
- WALLPAPER
- BABY FOOD
- PAPER PLATES
- SHAVING CREAM
- CHIPS
- MARGARINE
- DYES
- SYRUP
- INKS
- ALUMINUM
- BATTERIES
- YOGURT
- SHOE POLISH
- SOFT DRINKS
- LATEX PAINT
- CANDIES
- DIAPERS



**CORN ROWS & COLUMNS PUZZLE SOLUTION**  
 DOWN: 1) Diaper; 2) Cornstarch; 5) Leaves; 6) Silk; ACROSS: 3) Massicot; 4) Candy; 6) Syrup; 7) Ethanol; 8) Grass  
**ALL ABOUT CORN SOLUTION**  
 1) tassel; 2) leaf; 3) silks; 4) ear; 5) stalk; 6) roots  
**CORN DETECTIVE SOLUTION**  
 corn flakes; ice cream; soda; peanut butter; ketchup; salad dressing; jelly; marshmallows; taco chips

## WHERE DOES CORN COME FROM?

Modern corn descended from a grass called teosinte, which appears to have originated in Mexico. This plant still grows there today. The first-known ears of corn were only a few inches long. Centuries of breeding have resulted in bigger, fuller ears of corn. Even though corn has evolved to its current state, it still belongs to the grass family!

**ONE  
BUSHEL  
OF CORN  
CAN PRODUCE**



**38 BOXES**  
(12 OZ.) OF CEREAL

**33 IBS.**

OF STARCH, USED FOR  
CRAYONS, RUBBER TIRES,  
SALAD DRESSING,  
PANCAKES, ETC.



**258  
SIX-PACKS**  
OF SODA



**13.5 IBS.**  
OF HIGH PROTEIN  
LIVESTOCK FEED

**2.8 GALLONS**  
OF ETHANOL  
AND  
**17.5 IBS.**  
OF DISTILLERS GRAINS



**22.4 IBS.**  
OF PLA FIBER/POLYMER  
FOR CORN PLASTIC  
PRODUCTS



**10 BROILERS**  
FED FROM BIRTH TO  
FINISHING WEIGHT



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Sources: USDA-ERS, USDA, industry statistics, National  
Corn Growers Association, Cargill Dow Polymer,  
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