# KIDS CONNECTION

## Cool Corn

### What is Field Corn?

Field corn is not the type of corn you eat on the cob. It is a special type of corn that is allowed to dry in the field. The kernels are full of starch, protein and oil. About 99% of the corn grown in the U.S. is field corn. Most field corn is fed to livestock and made into a fuel called ethanol. It is processed to make products you use every day. The corn kernel is milled (ground) so that the germ oil, starch, gluten and hulls can be separated. These items are then made into cornstarch, cooking oil, sweeteners, high fructose corn syrup, cereal, beverages and fuel. And that's just the beginning! In fact, there are over 4,200 uses for corn products and more are being found every day.

### Corn Products

**Did you know that corn is made into edible and non-edible products?**


cake mixes


chewing gum


ethanol fuel


condiments


baby food


paints


high fructose corn syrup


fabrics


plastics


glue

### FUN FACT

Ethanol is a high performance fuel made from corn. Ethanol is better for the environment because it:

- helps reduce up to 29% air pollutant emissions
- is a renewable resource because it comes from plants that grow each year
- is biodegradable and does not pollute groundwater
- reduces the need to use fuel sources from fossil fuels which helps preserve this nonrenewable resource that has taken thousands of years to create

# Corn Growth Cycle

## Kernel

The seed which can germinate into a new plant or can be processed to make food and nonedible products such as ethanol or polymer plastics.

## Emergence

The first leaf, coleoptile or spike appears above the soil surface following germination. One leaf coming through the soil classifies this plant as a monocot.

## Vegetative

Up to 16 leaves grow and conduct photosynthesis to produce food from the sun for the plant.

## Silking & Tasseling

The tasse is the male part of the corn plant that contains the pollen. The silk is the hollow hair-like tube that captures the pollen and moves it down to the ovary of the plant. Each silk has the potential to pollinate one kernel of corn on the ear.

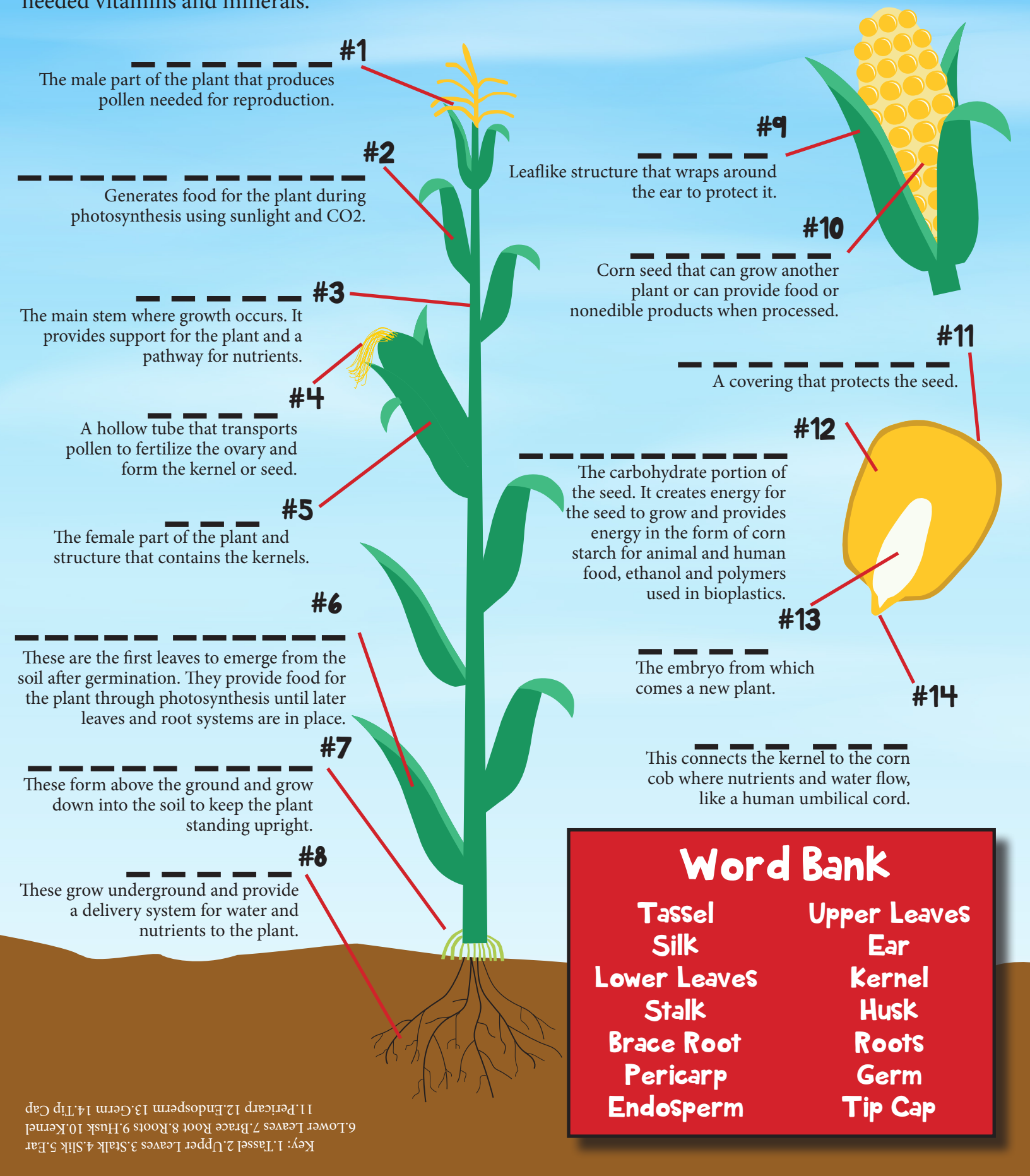
## Maturity

When field corn is ready to harvest, the seed is fully developed and dried down. The corn plant has died and changed to a golden brown color.

**$** In 2016, Kansas produced 699 million bushels of corn which contributed to a total economic output of $3.75 billion and 13,538 jobs.

# Label the parts of a corn plant!

A high percent of the corn kernel provides carbohydrates to our diet. Whole corn contains a high percentage of fiber from the seed coat. Corn has carbohydrates, fiber, oil and protein. It also contains needed vitamins and minerals.



**#1** _____
The male part of the plant that produces pollen needed for reproduction.

**#2** _____
Generates food for the plant during photosynthesis using sunlight and $CO_2$.

**#3** _____
The main stem where growth occurs. It provides support for the plant and a pathway for nutrients.

**#4** _____
A hollow tube that transports pollen to fertilize the ovary and form the kernel or seed.

**#5** _____
The female part of the plant and structure that contains the kernels.

**#6** _____
These are the first leaves to emerge from the soil after germination. They provide food for the plant through photosynthesis until later leaves and root systems are in place.

**#7** _____
These form above the ground and grow down into the soil to keep the plant standing upright.

**#8** _____
These grow underground and provide a delivery system for water and nutrients to the plant.

**#9** _____
Leaflike structure that wraps around the ear to protect it.

**#10** _____
Corn seed that can grow another plant or can provide food or nonedible products when processed.

**#11** _____
A covering that protects the seed.

**#12** _____
The carbohydrate portion of the seed. It creates energy for the seed to grow and provides energy in the form of corn starch for animal and human food, ethanol and polymers used in bioplastics.

**#13** _____
The embryo from which comes a new plant.

**#14** _____
This connects the kernel to the corn cob where nutrients and water flow, like a human umbilical cord.

## Word Bank

| | |
|---|---|
| Tassel | Upper Leaves |
| Silk | Ear |
| Lower Leaves | Kernel |
| Stalk | Husk |
| Brace Root | Roots |
| Pericarp | Germ |
| Endosperm | Tip Cap |

Key: 1.Tassel 2.Upper Leaves 3.Stalk 4.Silk 5.Ear 6.Lower Leaves 7.Brace Root 8.Roots 9.Husk 10.Kernel 11.Pericarp 12.Endosperm 13.Germ 14.Tip Cap

# Corn: from plant to table

1. 
Corn at harvest

2. 
Corn unloaded at elevator

3. 
Corn processed for corn syrup

4. 

Finished product with corn syrup

See corn harvest in action! To watch the Briggs family harvest corn on their family farm in Kansas, visit: http://bit.ly/cornharvestvideo

## Career Corner:

- Researcher
- Soil Scientist
- Farmer
- Entomologist
- Marketing & Sales
- Ag Engineer

## Activity: Make Your Own Biodegradable Corn Plastic

### Directions:

1. Place a tablespoon of cornstarch in a plastic zipper-seal bag.
2. Add 2 drops of corn oil to the cornstarch.
3. Add 1 1/2 tablespoons of water to the oil and cornstarch. Seal the bag.
4. Mix the cornstarch, oil and water in the plastic bag by rubbing the outside of the bag with your fingers.
5. Add 2 drops of your favorite food coloring to the mixture and mix well. **DO NOT** completely seal the bag.
6. Place the bag in a microwave oven for 20-25 seconds on high. Be careful. It will be hot. What happens to your plastic?
7. Form your plastic into a ball while it is still warm and describe what it does.
8. Record your scientific observations.

Kansas Foundation for Agriculture in the Classroom

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