

# AG IN THE CLASSROOM

## 3RD GRADE IT'S AN EARFUL

Students will learn how farmers grow and harvest corn, dissect corn kernels, investigate types of corn, and explore how corn impacts our lives.



### Students will...

1. Identify field corn as the leading crop grown in Illinois and the Midwest.
2. Name and describe 3 kinds of corn and how they are different.
3. List 3 uses for field corn.

### Supplies provided

- ear of field corn
- ear of popcorn
- ear of flint corn
- photo of sweet corn
- corn kernels for dissection
- Parts of a Corn Kernel/Corn Facts cards
- Corn kernel stickers
- How We Use Corn worksheets
- AITC certificates

### Other supplies needed

- projector & internet
- corn-related items (see list at end of lesson)
- optional: can of corn and/or package of frozen corn

### Before the lesson

- Soak the field corn kernels **overnight** in hot water and a few drops of dishwashing detergent to soften them for dissection.
- Prepare an It's an Earful AITC certificate for each student.
- Review the Google Slides found at <https://bit.ly/3rd-AITC>. You will be using these slides throughout the lesson. Each lesson step in **bold** below is a new slide or new information on the same slide.

### Procedure

1. Pass around a covered box containing 4-6 corn-related items (chosen from the list at the end of this lesson).
  - a. Challenge each student to look at the items carefully, then close the box and pass it on.
  - b. Once everyone has had a chance to look into the box, bring it back to the front of the room. Without opening it yet, ask students to list the items that were in the box.
  - c. Take out the items and place them where they can all be seen. Ask what the items might have in common.
  - d. All these items represent ways corn is used.
2. **Discuss corn.**
  - a. Corn is also known as maize.
  - b. It is a cereal grain, meaning it is produced by a grass plant. Wheat, rice, and oats are also cereal grains. (Now you know why that stuff we eat at breakfast is called "cereal"—it is made from cereal grains!)
  - c. Corn is a staple food for many people around the world.
3. **Review the parts of a corn plant.**
  - a. **stalk** – The stem of a corn plant. Corn plants are also called corn stalks.
  - b. **tassel** – The tassel grows from the top of the plant. It produces pollen.
  - c. **roots and brace roots** – The roots pull water and nutrients from the soil. Brace roots also help to support the stalk.
  - d. **ear** – The part of the plant that bears seeds (kernels).
  - e. **silks** – Hairlike strands that grow out the tip of each ear. A kernel forms on the ear for every silk on which pollen falls.

4. **Dissect corn kernels.** Give a softened corn kernel and Parts of a Corn Kernel card to each student. Explain that the kernels were hard like the kernels on the field corn ear, but you have softened them so they can be dissected or separated into their parts. Walk students through the dissection process as follows:
  - a. Hold your kernel with the point down.
  - b. Look at the top of your kernel. It should have a “dent” in it. The dent is how this type of corn got its name. This is dent corn, which is also called field corn. The dent forms in the top of the kernel as it dries.
  - c. Now look at the bottom of your kernel. This end is pointed. This is the tip cap. This is where the kernel attaches to the cob.
  - d. Look at the “flat” sides of your kernel. Are they the same? No, one side is mostly yellow while the other side has a lighter oval. The oval is the germ, or embryo. It is the part of the seed that will germinate and grow. The “germ” is not the same as germs that make us sick! Notice the word “germ” in the word “germinate”, which means to sprout.
  - e. Use the edge of your plastic corn fact card to break a little bit off the tip cap of your kernel. You might see a dark brown or almost black area. This is called the black layer. When farmers check their corn late in the growing season, seeing a black layer means the corn is mature and no longer taking water or nutrients from the plant. Now the kernels are just drying on the cob. When they are dry enough, they will be ready for harvest.
  - f. Break off a little bit more of the tip. There is a thin layer over the entire kernel. Peel it all the way off. If you hold this layer up to the light you will see that it is translucent, which means light can shine through it. This is the pericarp, also called the hull or seed coat. It protects the seed.
  - g. Use the edge of the plastic card to break the kernel in half from top to bottom. See if you can separate the germ (embryo) from the rest of the kernel.
  - h. What does the inside of rest of the kernel look like? It is white and kind of powdery. This is called the endosperm, and it provides food to the germinating embryo. It makes up most of the kernel. It is mostly starch.
5. **Why so much corn?**
  - a. Farmers grow corn for its grain—the kernels you just dissected.
  - b. The parts of the kernel can be separated and used for hundreds of different purposes.
6. **How do farmers grow it?** Show the steps of corn production:
  - a. **Fertilizing the soil**
  - b. **Planting the crop**
  - c. **Crop scouting, or checking the crop for progress and pests**
  - d. **Crop protection, or controlling weeds, insects, or diseases if needed.**
  - e. **Harvest**
  - f. **Tillage**
7. **Planting is one of the most important parts of each growing season.**
  - a. This video shows the boy and his dad planting popcorn. Popcorn is planted the same way as field corn.
  - b. After each turn, the boy takes his hands off the steering wheel. Modern tractors and combines have autosteer, which means they can steer themselves across the field!

**8. Harvest is a favorite time of year for many farmers.**

- a. Corn is harvested in the fall. Farmers will either haul the corn to grain bins on the farm, or to grain elevators. This video shows how the corn is harvested and where it is stored.
- b. As you watch the video, look for the following: combine, tractor, grain cart, grain semi, farm, and grain bins. There's even a peek at some soybean plants!

**9. Show students the ears of field corn, popcorn, flint corn, and the photo of sweet corn (optional: accompany the sweet corn photo with a can of corn and/or bag of frozen corn).**

- a. Are all these ears of corn the same? (No, they are different types and have different uses.)
- b. Of these four types of corn, which do you think farmers grow the most of? (Field corn)
- c. More than 90% of the corn farmers grow in Illinois and the Midwest is field corn.

**10. How do we use all that field corn?**

- a. Pass out the How Do We Use Field Corn worksheets and Kernels of Knowledge stickers.
- b. Explain that you are going to show 12 different slides. As you show each, students should find that picture on their worksheet and write its name underneath. Then they must decide whether this picture shows a way field corn is used. If it is, they should place a corn kernel sticker within the blank kernel under the picture.
- c. Show each slide, allowing time for students to write the names and decide whether each is a use for corn. Allow students to discuss with others if desired.

**11. How many uses of corn did you identify correctly?**

- a. Review the items one at a time, inviting students to add or remove stickers if needed.
- b. Summarize. Were students surprised?
- c. An explanation of all these uses is on the back of the worksheet, which can be read if held up to a mirror. It can also be read from the front of the page if held up to a bright light.

**12. Conclude the lesson.**

- a. Invite students to share something they learned that they are looking forward to telling their family when they get home.
- b. Distribute the AITC Certificates and encourage students to show them to their parents.
- c. Optional: Introduce the CONNECTIONS Magazine Cover Design Contest as a way for students to illustrate what they learned. Provide class time for students to plan and create their designs. Rules and entry forms can be found at [www.GrowYoungMinds.org](http://www.GrowYoungMinds.org).

**Items That Are (or Represent) Uses for Field Corn**

- toy pig, cow, or chicken (corn in feed)
- toy car (ethanol fuel)
- hand sanitizer (ethyl alcohol is another name for ethanol)
- breakfast cereal (corn meal, corn flour, or corn sweetener)
- corn tortillas (corn flour, or masa harina)
- soft drink or fruit juice (corn syrup)
- Sweet Tarts® candy (dextrose)
- paper (corn starch is used to strengthen and improve the surface of paper)
- pet food (corn meal)

## It's an Earful: Vocabulary

**agriculture** –the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products ~ *Merriam-Webster*

**cereal** – grasses such as corn, rice, wheat, or oats which are grown for their edible grain

**cob** – the inner, woody part of an ear of corn; the kernels are attached to the cob

**combine** – a machine that harvests crops by cutting the plants and removing the seeds while moving across a field

**corn flour** – finely ground cornmeal used in tortillas, cereals, and baked goods

**corn oil** – oil extracted from the kernels of field corn; used in cooking and in products such as margarine and salad dressing

**corn syrup** – created by processing corn starch and used to sweeten many foods

**corn starch** – white powdery substance derived from corn kernels; used in many food products, in paper, and to make ethanol

**ear** – the part of a corn plant that bears the seeds or kernels

**embryo** – the part of a corn kernel that will sprout and grow; also called the germ

**endosperm** – the starchy part of a corn kernel that feeds the growing embryo

**ethanol** – also known as ethyl alcohol, ethanol is produced from corn to be used as fuel and in products such as hand sanitizer

**export** – sell products to another country

**farmer** – a person who earns a living by growing crops and/or raising livestock

**fertilizer** – substance added to soil or land to increase its fertility and help plants grow

**field corn** – type of corn grown and used as a grain to feed livestock or to be processed for use in food and other products; also called dent corn

**flint corn** – type of corn often used for decoration due to its multicolored, extremely hard kernels; also known as Indian corn

**harvest** – to pick or gather crops

**herbicide** – a substance used to control weeds without harming crops or wildlife

**hull** – the outer coating of a corn kernel; also called the seed coat or pericarp

**husk** – the tightly-wrapped leaves that cover the ear of corn

**ingredient** – material that is part of a mixture; for example, flour is an ingredient in cookies

**insecticide** – a substance used to control unwanted insects in crops without harming wildlife

**kernel** – the seeds of a corn plant

**nutrients** – substances plants take in from the soil as food for growth and development

**planter** – machine pulled by a tractor; used to plant several rows of seeds at a time

**popcorn** – type of corn that pops when heated due to moisture trapped within a tough outer hull or seed coat

**silk** – the long strands that emerge from the tip of each ear of corn; a kernel forms on the ear for every silk on which pollen falls

**stalk** – the sturdy stem of a corn plant

**sweet corn** – type of corn which is high in natural sugar; grown as a vegetable

**tassel** – the male flower which is located at the top of a corn plant; produces pollen

**tillage** – using a machine pulled by a tractor to break up the soil and prepare it for planting

**tractor** – a large vehicle, usually with larger rear wheels and smaller front wheels, used to pull farm equipment such as planters