

# IT'S AN EARFUL

## 3<sup>rd</sup> Grade Ag in the Classroom Lesson Plan



### What students will learn and do:

- How is field corn different from other kinds of corn?
- What are the steps of corn production?
- How is field corn used?
- Students will dissect corn kernels and construct corn stalks made of paper.

**Length of presentation:** 50-55 minutes.

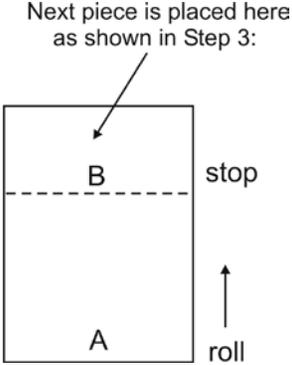
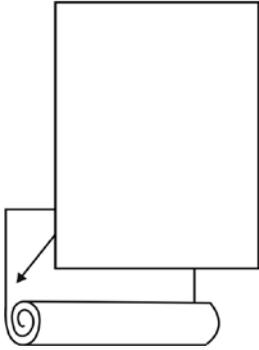
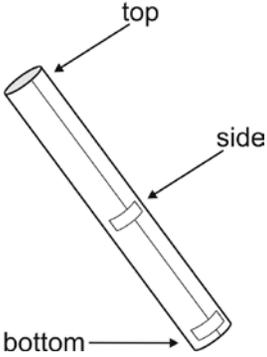
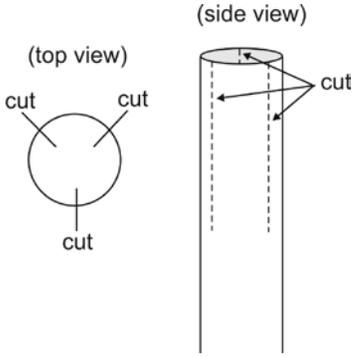
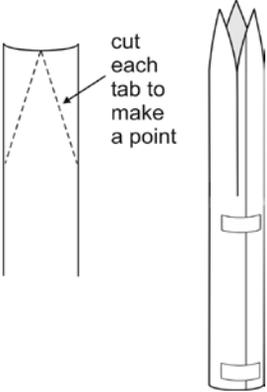
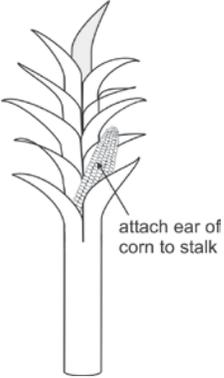
### Materials needed

1. Bushel basket – *1 per presenter*
2. Agriculture definition poster – *1 per class to leave in classroom*
3. Photo of sweet corn – *1 per presenter*
4. Ear of popcorn – *1 per presenter*
5. Ear of Indian corn – *1 per presenter*
6. Ear of white corn – *1 per presenter*
7. Ear of field corn – *1 per presenter*
8. Several items made from/containing corn, such as baby food, hand sanitizer, ketchup, paper (a notepad works well), pet food, and non-diet soft drinks. Additional items are listed on the **Corn Fact Sheet** (in your packet). Uses listed on this sheet are the same as listed on the students' paper ears of corn. – **Presenter provides.**
9. Small bag of corn kernels for dissection activity (**soak overnight!**) – *1 per classroom*
10. Parts of Corn Kernel poster – *1 per presenter*
11. Corn product samples: corn starch, corn syrup, ethanol, and corn meal (vials inserted in foam display board); DDGS (4-oz. clear bottles) – *1 per presenter*
12. Corn Production posters (5) – *1 set per presenter*
13. Large pair of scissors (for your use) – **FB provides.**
14. Green paper – *3 sheets per student*
15. Scotch tape – **Presenter provides**
16. Stapler & staples – **Presenter provides**
17. Paper ears of corn – *1 set of 30 per class*
18. Student handouts:
  - Certificates of Participation – *1 per student* (signed by you in advance)
  - Corn Ag Mags – *1 per student*
19. Teacher gift bag – *1 per teacher*

## Procedure

1. **Introduce yourself.** Thank teacher & classroom for having you. Tell class what you do, or ask them to guess. By show of hands:
  - *How many of you live on a farm?*
  - *How many of you have a relative that lives on a farm?*
  - *How many of you have ever been to a farm?*
  - *How many of you have ever seen a corn field?*
2. **“What do you think of when you hear the word agriculture?”** Write students’ ideas on board. Discuss, then **display “Agriculture” definition poster. Emphasize the word “science”.** Tell the class they are going to learn about the many ways science affects one area of agriculture - **CORN.**
3. **Show and discuss different kinds of corn.**
  - Show photo of **sweet corn.** *“How many of you have ever eaten corn on the cob?”*
  - Next show students an ear of **popcorn.** *“Does anyone know what this is? This is popcorn. I’ll bet many of you have eaten this kind of corn, too!”*
  - Show ear of **Indian corn.** *“What kind of corn is this? We call it Indian corn. It is usually used for decoration, but some Native Americans still use it as a traditional food.”*
  - Show students the ear of white corn. *“This is white corn. It is used for things like corn tortillas and chips. In fact, this corn is made into Tostitos!”*
  - Now show students an ear of **field corn.** *“Is this the same as the sweet corn you eat in the summer? No. This is called field corn.”* Share facts from top of **Corn Fact Sheet.** *“All the uses we are going to talk about today are uses for **field corn.**”*
  - *“You eat and use field corn, too, but you probably don’t realize it.”* Show a few kid-familiar items containing corn ingredients (see suggestions in Materials Needed section of page 1). *“Science helps us to use each part of the corn kernel in different ways.”*
4. **Dissect corn kernels.** “Let’s be scientists and dissect a corn kernel to see its parts.”
  - Give each student a corn kernel that has been softened in advance. (Soak overnight or longer in water and several drops of dishwashing detergent.)
  - If asked, students should NOT eat their kernel! It has been softened using a combination of water and detergent.
  - *“Hold your kernel with the point down.”*
  - *“Now look at the top of your kernel. It should have a “dent” in it. This dent is how this kind of corn got one of its names. This corn is known as field corn, or dent corn. The dent forms in the top of the kernel as it dries.”*
  - *“Now look at the bottom of your kernel. This end is pointed. This is called the **tip cap.** This is where the kernel attaches to the cob.”*

- *“Look at both “flat” sides of your kernel. Are they the same? No. One side is mostly yellow while the other side has a whitish-colored oval. This oval is called the **germ**, or **embryo**. This is the part of the seed that will germinate and grow. The germ contains oil. This “germ” is not the same as the germs that make us sick! Notice the word “germ” in the word “germinate”, which means to sprout or begin to grow.”*
  - *“Using your fingernails, carefully 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 stalk. Now the kernels are just drying on the cob. When they are dry enough, they will be ready for harvest.”*
  - *“Now break off a little bit more of the tip. There is a thin layer over the entire kernel. Carefully peel it all the way off. If you hold this layer up to the light you will notice that it is somewhat transparent, or see-through. This is the **pericarp**, which is also called the **hull** or **seed coat**. This layer protects the seed.”*
  - *“Break the kernel in half from top to bottom. The germ might pop out on its own. If it doesn’t, you may carefully separate it from the rest of the kernel.”*
  - *“What does the inside of rest of the kernel look like? It should be white and somewhat powdery-looking. This white substance makes up most of the kernel. It is called the **endosperm**. This part of the seed provides food to the germinating embryo. It is made up of starch and protein.”*
5. **Show and explain the Parts of a Corn Kernel poster.** Pass around the sample set of corn products so that students can see what the processed components look like.
6. **Use posters to show and explain how farmers grow corn.** The series of posters shows 1) tillage, 2) planting, 3) weed control, 4) crop scouting, and 5) harvest. Explain that grain is measured in bushels. *A bushel of corn would fill this basket (show bushel basket).*
7. **Tell the class you would like for them to help you transform their classroom into a make-believe corn field.** Each student will be a farmer to make this happen. Each “farmer” must follow directions and be a good listener so they complete the proper steps to planting their field. (This also takes a farmer with a good imagination!)
- Have students get out their scissors.
  - Ask teacher to choose 2 volunteers to help pass out materials.
  - Have these volunteers hand out supplies as you tell the class, *“These farmers are giving us the supplies we need to grow our pretend corn.”*
  - During this time you place 2 pieces of tape on the side of each student’s desk.
  - Each student is given 3 sheets of green paper.
  - As materials are passed out, discuss the question, *“What would we need to grow a crop of real corn?”* – Equipment (tractor, planter), soil, seed corn, sunlight, water, etc.
  - You may also share facts from top of **Corn Fact Sheet** as materials are distributed.
8. **Explain and demonstrate the steps shown on following page. Pause after explaining each step to give students time to work.**

<p>1) Roll loosely (to just smaller than paper towel tube size) one piece of paper from point A about <math>\frac{1}{2}</math> to <math>\frac{3}{4}</math> of the way, stopping at point B.</p> 	<p>2) At the stop point ("B"), tuck in the next piece of paper. Continue rolling to about <math>\frac{3}{4}</math> of the way, then add the third piece of paper and roll all the way.</p> 
<p>3) Tape the roll at the bottom and halfway along the side (do not tape at the top).</p> 	<p>4) Cut 3 lines about halfway down from the top of tube. Now the top of your paper tube should have three tabs. These will become leaves.</p> 
<p>5) "The tips of each corn plant leaf are pointed." Cut points at top of each tab.</p> 	<p>6) Pull gently from the center of tube to help corn "grow." <b>Be careful not to pull too far or the stalk will unravel.</b></p> 
<p>7) Pull tabs downward to create leafy effect. Now you have a cornstalk!</p> 	<p>8) Explain to students that stalks of field corn usually bear only one ear. (Each ear is covered with special leaves called husks.) <b>Staple an ear of corn to each corn stalk until every student has one ear.</b></p> 

9. **Extra ears and green paper may be left with the teacher so students can make more cornstalks later.** Or, use all 30 ears by adding an extra to the stalks of students sitting in outer rows. Explain that sometimes in a real cornfield outer rows will generate two ears because of increased sunlight.
10. **Show and explain the Parts of a Corn Plant poster.** Once the students have completed their corn stalks, use the Parts of a Corn Plant poster to explain the key parts of the plant. Discuss the parts missing from the students' corn stalks: roots and tassels, and the functions of each on the plant
11. **Discuss how corn is used.** Discuss some of the many ways corn is used. **Invite several students to read the information on their ear of corn aloud.** During the discussion, bring out these key points:

- **More than 99% of the corn grown in the U.S. is field corn (show ear of field corn).** Less than 1% of the corn grown is sweet corn, popcorn, or Indian corn.

Over the years, science has made it possible to grow more corn on less land. Farmers raise enough corn for many things, including:

- livestock feed
- ethanol fuel
- distillers grains (a by-product from ethanol production that is used as feed)
- export to other countries
- food (such as corn meal, corn flour, sweeteners, and thickening agents)
- industrial uses (such as starch used in paper)

- ★ **Challenge students to explore food and non-food products in their homes and at the grocery store to see how many items contain ingredients from corn!**
- ★ *Suggest that the teacher designate an area of the room or hallway as a "cornfield" so the students may admire their work and continue learning about the many uses of corn.*

## 12. CONCLUSION

- Invite students to raise their hands and share something new they learned that they are looking forward to telling their parents when they get home (as time allows).
  - Answer any questions.
  - Hand out signed certificates (students may fill in their own names).
  - Remind teacher/class of upcoming **placemat design contest. The deadline for entries is March 10, 2017.** The third grade contest theme is **"Farm Grown."**
  - Thank class and teacher!
13. Before leaving, give teacher the gift bag. Point out the evaluation link, placemat contest rules/entry forms, and other items. **Remind teacher to submit the online evaluation.**