Corn and Soybeans

*Lesson Plan for Grade 4, Science*

*Prepared by NAITC*

*Modified by Mississippi State University, School of Human Sciences*

*for Mississippi Farm Bureau Federation - AITC*

# OVERVIEW & PURPOSE

In this lesson students will be able to differentiate between corn and soybeans and their importance to us as consumers. Students will also be exposed to monocots and dicots.

# EDUCATION STANDARDS

**Mississippi College-and-Career Readiness Standards:**

L.4.2.1 Compare and Contrast the life cycles of familiar plants and animals.

ELA-W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources.

**NALOs**

T2.3-5 e Understand the concept of specific ways farmers/ranchers care for soil, water, plants, and animals.

T2.3-5 b. Describe how technology helps farmers/ranchers increase their outputs (crop

and livestock yields) with fewer inputs.

# OBJECTIVES

* Students will compare and contrast corn and soybean plants, the growth and development, and how each are used for different purposes and make different products that all of us use daily
* Students will identify the parts of a monocot and dicot and measure growth

# MATERIALS NEEDED

* [*Corn Belt Harvest* by Raymond Bial](https://books.google.com/books/about/Corn_Belt_Harvest.html?id=tNJqJtM3a9sC)
* Untreated corn seeds (2 per student)
* [*The Super Soybean* by Raymond Bial](https://books.google.com/books?id=kHCOZjp4ZNQC&printsec=frontcover&dq=The+Super+Soybean+by+Raymond+Bial&hl=en&newbks=1&newbks_redir=0&sa=X&ved=2ahUKEwi_vZzJyKblAhXS1lkKHdgjCr0Q6AEwAHoECAAQAg#v=onepage&q=The%20Super%20Soybean%20by%20Raymond%20Bial&f=false)
* Untreated soybean seeds (2 per student)
* Soil (1 large bag, enough to fill student cups)
* Small plastic cups (1 per student)
* Large butcher paper
* [Diagram of corn kernel](http://media.web.britannica.com/eb-media/54/166754-050-8DEB8E13.jpg)
* D[iagram of a bean seed](http://www.growingyourfuture.com/civi/sites/default/files/AnatomyOfBeanSeed.pdf)
* Reflection sheet (1 per student)

Essential Links:

* [Diagram of corn kernel](https://drive.google.com/file/d/1Mo15rIU9lvAPG7mbbiQsY5bkTgYoqgsJ/view?usp=drive_link)
* D[iagram of a bean seed](http://www.growingyourfuture.com/civi/sites/default/files/AnatomyOfBeanSeed.pdf)
* [*The Super Soybean* by Raymond Bial](https://www.amazon.com/Super-Soybean-Raymond-Bial/dp/0807575496)
* [*Corn Belt Harvest* by Raymond Bial](https://books.google.com/books/about/Corn_Belt_Harvest.html?id=tNJqJtM3a9sC)

# Lesson Set Up:

1. Print reflection sheets (1 for every student).
2. Have two bowls set up (1 filled with soybeans, the other filled with corn).
3. Have 1 plastic cup filled with soil ready for each student.
4. Cover each desk or table with table cloths or butcher paper to make cleaning up easier.
5. Create a KWL chart on the board.
6. Prepare both books to be read aloud.

# Vocabulary

**Germination**: process of a plant emerging from a seed and beginning to grow

**Embryo**: part of a seed that develops into a plant

**Cotyledon**: part of the embryo within a seed that provides nutrients for the germinating plant

**Monocot**: flowering plant with an embryo that has one cotyledon

**Dicot**: flowering plant with an embryo that has two cotyledons

**Ethanol**: renewable fuel made from various plant materials

**Biodiesel**: renewable fuel made from oils and fats of natural origin

**Renewable resource**: any natural resource that can replenish itself naturally over time

**Non-renewable resource**: any natural resource that cannot be replenished naturally; when it is gone it is gone forever

# Ag Facts:

# Soybeans are **native to East Asia**, but are **now widely cultivated and consumed across the globe**.

# Soybeans were a crucial crop in East Asia long before written records began.

# There is **evidence for soybean domestication** between 7000 and 6600 B.C. in China, between 5000 and 3000 B.C. in Japan and 1000 B.C. in Korea.

# Soybeans were **first introduced to North America from China in 1765**, by Samuel Bowen, a sailor who brought them from China.

# The **main countries growing soybeans** are the [**United States**](http://justfunfacts.com/interesting-facts-about-the-united-states-of-america/) (32% of world total in 2016), [**Brazil**](http://justfunfacts.com/interesting-facts-about-brazil/) (31%)and [**Argentina**](http://justfunfacts.com/interesting-facts-about-argentina/) (18%).

# 116,600,000 bushels of soybeans were produced in Mississippi in 2018.

# Background Information for Teacher:

Corn and soybeans are Iowa’s #1 and #2 crops, and Iowa leads the country in corn production and usually soybean production as well, with Mississippi not being far behind. Corn and soybeans that are raised in Iowa are used for a variety of different products, including ethanol to power cards, corn syrup that’s found in candy, fruit snacks, and some fruit juices, corn starch that is a common thickener, fed to livestock and used for food products like corn chips and taco shells.

Soybeans are used for biodiesel to power trucks and busses. Soybean oil is the main ingredient in vegetable oil, and can be processed into soy milk, tofu, and soy protein. Soybeans are also used to feed livestock. Corn and soybeans develop very differently. Corn is a type of grass, and soybeans are a legume. Corn is a monocot, and soybeans are dicots, meaning that corn only has one cotyledon and soybeans have two. Cotyledons become the first true leaves of the plant. Soybeans develop nodules on their roots that help fix nitrogen from the atmosphere for the plant to use. Corn does not have that ability, and must rely on the soil for the nitrogen it needs.

# LEARNING PROCEDURES

Interest Approach:

1. Split students into two groups. Give one group a bowl of soybeans and one group a bowl of corn, half-full. Give the groups 5 minutes to determine what they know about the commodity in their bucket.
2. Then, have the soybean group teach the corn group what they think they know, and the corn group share what they know.
3. Next, have students discuss the crops and add additional information they know.

Activity: 1

1. Create a What you Know- Want to Know- and What you Learned (KWL) chart for both corn and soybeans listing what students share. Complete the first two sections with the students via class discussion.
2. Have students use magnifying glasses to examine the corn and soybean seeds. Share observations about what they see and make a list on the board for the corn and soybean seed.
3. Open already softened (pre-soaked) seeds and look and label the parts of a corn and soybean seed. Label the parts on the blank diagram worksheet.
4. Discuss the differences in the seeds with the students. **“What other crops might have seeds similar to corn? Soybeans?”**
5. Students will plant the seeds. Collect and place next to a warm area in the room.
6. Over the next week, allow students to observe the growth of their seeds and this project will be completed by the end of activity 2.

Activity: 2

1. Together read each book by Raymond Bial. Discuss as the books are read products we get from corn and soybeans.
2. Discuss what makes corn and soybeans a renewable resource and how we can use them for fuel. (Corn and soybeans are renewable because farmers can replant them every year. Corn and soybeans can both be used to make fuel).
3. As a class, complete a large Venn Diagram comparing and contrasting corn and soybeans as a whole class.
4. The Venn Diagram could compare and contrast uses, growth, and seed parts.
5. Students will then individually write 3 facts they learned about corn and 3 facts they learned about soybeans on sticky notes and place them on the “L” portion of the KWL chart.
6. Students can record observations individually or as a class, and add anything they observe to the class Venn diagram.

**Concept Elaboration and Evaluation**

* Have students complete the reflection sheet to conclude the lesson.

# Additional Learning Procedures

To help students review and elaborate more about corn and soybeans, try using the [“The Carousel”](https://drive.google.com/file/d/18wkOwdmhF2e4whltWdMBee2QjbCWbOnZ/view?usp=sharing) method to allow students to think deeper and make new connections.

Additional Texts to Include:

[Popcorn](https://www.agfoundation.org/recommended-pubs/popcorn)

[Auntie Yang’s Great Soybean](https://www.agfoundation.org/recommended-pubs/auntie-yangs-great-soybean-picnic)

[Harvest Time](https://www.agfoundation.org/recommended-pubs/harvest-time1)



Source: <https://www.agclassroom.org/teacher/matrix/>

*For more information and additional lessons visit*

*https://msfb.org/ag-in-the-classroom/lesson-plans/.*