Corn

*Lesson Plan for Grade 2, Science*

*Prepared by NAITC*

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*for Mississippi Farm Bureau Federation - AITC*

# OVERVIEW & PURPOSE

In this lesson students learn the definition of a pest and identify categories of pests including vertebrates, invertebrates, weeds, or disease. Through a classroom activity, students learn how pests affect the growth of crops.

# EDUCATION STANDARDS

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

L.2.1.2 Classify vertebrates (mammals, fish, birds, amphibians, and reptiles) based on their physical characteristics.

ELA-RI.2.4 Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

**NALOs:**

T2. K-2 c Identify examples of feed/food products eaten by animals and people.

# OBJECTIVES

* Students will identify vertebrates, invertebrates, weeds, and diseases that affect corn

# MATERIALS NEEDED

* Corn Pest Images, printed or projected on board (1 set)

### Essential Files (maps, charts, pictures, or documents)

* [Corn Pest Images](https://drive.google.com/file/d/1JN949EdHHdg62IauHAd_r3zf6YdbqZ6J/view?usp=drive_link)

# Lesson Set Up:

1. Print the corn pest images.

# Vocabulary

**disease:** fungi, bacteria, viruses, and other microorganisms

**integrated pest management:** a process that uses different ways to control pests

**pest:** an organism living and growing where it is not wanted and is causing damage to plants, humans, structures, and other creatures

**pesticide:** a chemical that is used to control an organism living and growing where it is not wanted

**weed:** any plant growing out of place

# Ag Facts:

* Corn is an important crop, it has over 3,500 different uses.
* Popcorn is a variety of corn that has water inside the kernel. When it is heated, the kernel explodes, making popcorn.
* Corn is native to the Western Hemisphere.

# Background Information for Teacher:

Pests are organisms living and growing where they are not wanted and can cause damage to plants, humans, structures, and other creatures. Pests can be broken into four main categories:

* Vertebrate Pests – Have a backbone. Examples: Rodents, birds, reptiles, and other mammals
* Invertebrate Pests – No backbone. Examples: Insets, spiders, ticks, slugs
* Weeds – Any plant growing out of place.
* Disease – Fungi, bacteria, viruses, and other microorganisms.

**Integrated Pest Management**

To control pests both in our homes and on crops, integrated pest management is a strategy that we can use. Integrated pest management is a process that uses different ways to control pests. The steps include:

1. Identify the Pest
2. Monitor Pest Activity
3. Choose Control Methods
4. Evaluate Results

The control methods in integrated pest management include cultural, biological, mechanical, and chemical. As homeowners use a combination of ways to control pests, farmers also use these methods but in different ways. Depending on the audience, explain control methods from the example of a mouse in the house and/or the example of control pests in agriculture.

* **Cultural control** means changing the environment. In the home, that can be cleaning up food and keeping the area clean. In agriculture, that means crop rotation in fields, managing the soil for optimum soil health, and choosing resistant varieties, such as corn hybrids that are resistant to a pest.
* **Mechanical control** means physical objects such as traps, machines, and devices. In the home, a mouse trap may be used. In agriculture, plowing and tillage of the soil might be used to control weeds and traps are also used for monitoring insects and catching pests.
* **Biological controls** are natural enemies of the pests, such as animals and other creatures. In the home, that could be a cat that eats the mouse. In agriculture, that can be predators like lady beetles and lacewings, or parasites like wasps and flies.
* **Chemical controls** are poisonous to pests, such as sprays, dusts, and baits. In the home, mouse bait (a rodenticide) might be used. In agriculture, pesticides are sometimes used to control various pests to crops.

**Chemical Safety**

Chemical control is a control option in integrated pest management. In agriculture, if farmers are applying pesticides to control pests, they often have to be certified pesticide applicators, which means they have to take a test to obtain their pesticide license and attend meetings to learn more information about applying pesticides safely. When farmers use pesticides, they have to read the pesticide label for instructions, wear necessary personal protective equipment, and apply pesticides at labeled rates. By following the pesticide label, they can ensure they are applying the right amount, as applying too much pesticide could severely damage the crop. They also must keep records of their pesticide application and have a safe place to store pesticide products on the farm.

Pesticide applicators must be responsible when using pesticide products. They sometimes choose to use pesticides as pests would otherwise destroy their crop, but they must be good stewards to protect the environment, their families and other people, and also themselves.

Pesticides must also be used responsibly in the home. If you are using any product to control pests, whether they are vertebrates, invertebrates, weeds, or diseases, pesticides must be used responsibly. Examples of pesticide products in our home include rodenticide bait to control mice, flea control for pets, insect repellents, any cleaning product that controls bacteria, viruses, and other diseases, and more. Just like the farmers, homeowners should always read the label and follow the label instructions. Pesticides should be stored properly, out of reach of children, when not in use. Mr. Yuk can be placed on the products to alert family members of a potential poisonous product.

# LEARNING PROCEDURES

Interest Approach:

1. Ask students if they can define the word, *pest*. Ask if they can give you examples of pests.
2. Explain that pests are organisms living and growing where they are not wanted. They can cause damage to plants, humans, structures, and other creatures.
3. Inform students that they will be learning about different kinds of pests and the ways they can be controlled to prevent damage to plants that provide our food.

Activity 1: Pests

1. Write the following words horizontally across your board: Vertebrate Pests, Invertebrate Pests, Disease, and Weeds.  
   Teach students that there are four main categories of pests.
   1. Vertebrate Pests – Have a backbone. Examples: Rodents, birds, reptiles, and other mammals
   2. Invertebrate Pests – No backbone. Examples: Insects, spiders, ticks, slugs
   3. Weeds – Any plant growing out of place.
   4. Disease – Fungi, bacteria, viruses, and other microorganisms.
2. ***Discussion:*** *Have students share an example of a pest, why the organism is a pest, and whether the pest is a vertebrate, invertebrate, weed, or disease.*
3. Teach students that pests can pose a serious threat to a food supply. A major food crop is corn, which supplies humans with food that we eat, food for animals, and corn ethanol used for fuel. There are many pests to corn, including vertebrates, invertebrates, weeds, and diseases.
4. Create columns of the board labeling them vertebrate pests, invertebrate pests, disease, and weeds like in the image below.
5. Print the Corn Pest Images, discuss the images with students, and place them on the board underneath the appropriate pest category. Use the images and the information below to teach students about the following pests that could damage corn crops.
   1. **Vertebrate Pests** – Deer, raccoons, rabbits, birds, and other creatures can eat the corn crop at various stages of the growth of the corn.
   2. **Invertebrate Pests** – Cutworms are the larvae of what will eventually become a moth. In the larvae stage, the cutworms live near or below the soil surface. The cutworms feed on corn that has recently emerged from the ground, chewing off the small corn sprouts causing damage that often appears as if the corn has been “cut.” Other invertebrate pests can attack corn at various stages of growth.
   3. **Weeds** – Besides the corn plants, any other plant in the corn field could be considered weeds, as these other plants are competing for water, sunlight, and nutrients with the corn.
   4. **Diseases** – Blights, rusts, and leaf spots are just a few diseases that can affect corn. Corn blight is caused by fungal pathogens, with lesions developing on the lower leaves and possibly spreading to the whole plant. The corn experiences decreased photosynthesis, with the corn leaves eventually turning brown.

Activity 2: Pests in the Corn

1. **Alternative Activity Prep**: In case a student is unable to participate in the activity, print or write “Vertebrate Pests” on a sign or a sheet of paper, “Invertebrate Pests” on a second sheet, “Weeds” on a third sheet, and “Diseases” on a fourth sheet. A student unable to participate in the activity can help by displaying the sign once the pest damage is discussed in the activity.
2. **Activity Facilitation:** Students will be moving in the activity as they explore how pests can affect corn. As the facilitator, you will be explaining what is happening to the corn and demonstrating the movement, as the students follow you. Students will be standing for the activity and should have some space around them so they can move in the activity and not bump into other students.
3. The activity begins with students becoming the corn seed planted in the ground. Have students crouch down, with their feet on the ground. As the corn seed begins to grow and rises up out of the ground, have students begin to stand. Before standing up completely, tell students to put their head to the left side. Explain that a pest has just attacked the corn. Ask students what pest it was. Point to the picture of the cutworm on the board. Remind students that a cutworm eats the corn as a small corn sprout. Tell the students that because we had a pest problem, the corn did not grow.
4. Tell students we are going to try again to grow corn, so assume the first position of the corn seed, crouching down with feet on the ground. As the corn seed begins to grow and rises up out of the ground, have students begin to stand. Have them stand the whole way up, but keeping their arms crossed over their chest. Explain how another plant is growing right beside them. That plant is getting bigger, taking all the water, sunlight, and nutrients. The corn cannot grow anymore, so their arms have to stay crossed over their chest. Explain that a pest has just attacked the corn. Ask students what pest it was. Point to the picture of the weeds on the board. Remind students that when another plant is growing out of place, it takes the water and nutrients that the corn needs, so it does not grow as well. Once again, we had a pest problem and the corn did not grow.
5. Tell students we are going to try again to grow corn, so assume the first position of the corn seed, crouching down with feet on the ground. As the corn seed begins to grow and rises up out of the ground, have students begin to stand. Have them stand the whole way up and put elbows up and out, replicating the leaves of the corn. Explain to the students that brown spots are beginning to appear on the leaves. The spots are getting bigger. Have the students slowly begin to drop their elbows back down to their bodies, as the corn leaves are browning and the corn cannot make its own food. Explain that a pest has just attacked the corn. Ask students what pest it was. Point to the picture of the corn with leaf blight on the board. Remind students that when fungal spores landed on the corn, lesions spread, and the corn could no longer make its own food, so it did not survive. We had a pest problem and the corn did not grow.
6. Tell students we are going to try again to grow corn, so assume the first position of the corn seed, crouching down with feet on the ground. As the corn seed begins to grow and rises up out of the ground, have students begin to stand. Have them stand the whole way up and put elbows up and out, replicating the leaves of the corn. Stand for a moment in that position, as the corn is growing, taking in water, sunlight and nutrients. Explain to students that something is in the corn field, eating the corn leaves. Have them bring one arm down by their side and then bring down the other arm. Explain that a pest has just attacked the corn. Ask students what pest it was. Point to the picture of vertebrate pests (deer and raccoon) on the board. Once again, we had a pest problem and the corn did not grow.
7. Tell students we are going to try one more time to grow corn, so assume the first position of the corn seed, crouching down with feet on the ground. As the corn seed begins to grow and rises up out of the ground, students begin to stand. Have them stand the whole way up and put elbows up and out, replicating the leaves of the corn. Stand for a moment in that position, as the corn is growing, taking in water, sunlight and nutrients. Have students make fists with their hands to replicate the ears of corn. Explain that there was no pest problem! The corn has successfully grown and can be harvested for use as food and fuel.

**Concept Elaboration and Evaluation**

* **Discussion:** Explain to students that farmers have many pest problems to watch for when growing corn. Ask students what else might affect corn growth. Responses could include frost, drought, hail, and other weather factors. Like any living organism, corn needs nutrients, water, and a healthy environment to grow; this includes sunlight, healthy soil, and pest management.

# Additional Learning Procedures

To help students review and elaborate more about corn, try using [“The Carousel”](https://drive.google.com/file/d/15JM3BVXNwySjBX5VHeetNRXrUTv-gPg5/view?usp=drive_link) method to get students to participate in discussions.

To further promote students learning about corn, read aloud the book [“Corn” by: Gail Gibbons.](https://www.amazon.com/Corn-Gail-Gibbons/dp/0823422453/ref=sr_1_3?crid=1OIQI1SY9EYRN&keywords=corn+books+for+kids&qid=1692976772&sprefix=corn+books+for+kids%2Caps%2C124&sr=8-3) In this book ask students to make connections to the lesson taught, and make inferences to what they think will happen next in the corn growing cycle.

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

*For more information and additional lessons visit*

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