

ACTIVITY SNAPSHOT

SUPPORTING AREAS

Environment, soil health, renewable and nonrenewable resources, science, technology, weather, plant biology, water conservation

PURPOSE

Students will explore how Nebraska farmers use STEM during the summer growing season to keep crops healthy and protect the environment. They will learn how plant growth stages, weather data, soil monitoring, integrated pest management, irrigation technology, and conservation practices all work together to produce strong crops. The activity emphasizes real-world STEM careers and the important role of Nebraska agriculture in feeding the world.

STATE STANDARDS IT SUPPORTS

SC 5.13.4.c Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

SS 5.3.2 Compare the characteristics of places and regions and draw conclusions on their impact on human decisions.

MATERIALS

Activity 1

Video 2: From Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy

- (1 per student)

Activity 2

- Paper cutouts of corn ears
- Pieces of yarn or string (to represent silks)
- Small beads (to represent pollen)
- Glue or tape
- Optional: markers to indicate "stressed" silks (due to weather, pests, or plant stress)
- Corn Image

Video 2: Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy

Activity Summary

Students will watch an educational video featuring Nebraska farmer Mitch as he monitors his growing corn crop and uses STEM to keep plants healthy. They will learn about plant growth stages, pollination, irrigation technology, and sustainable practices that protect the environment. Students will complete a follow-along worksheet during the video and take part in a hands-on pollination simulation to understand how kernels form.

Vocabulary Words

Tassel – The flowering part at the top of a corn plant that produces pollen.

Silk – Hair-like strands on an ear of corn; each silk connects to a potential kernel.

Pollination – The process of pollen transferring from tassels to silks to form kernels.

Integrated Pest Management (IPM) – A strategy to control pests using careful monitoring, natural predators, and targeted treatments only when needed.

Irrigation – Applying water to crops when rainfall is not enough.

Key Concepts

- Farmers use STEM to monitor plant growth, manage pests, and apply water precisely.
- Corn growth stages are critical for pollination and kernel development.
- Nebraska farmers use irrigation systems, soil moisture sensors, and weather data to conserve water.
- Sustainable practices protect soil, conserve water, and ensure healthy crops.

What's the Connection to Agriculture?

Summer is a busy season for Nebraska farmers. Beyond planting, farmers like Mitch scout fields, monitor plant health, and use precision irrigation to keep crops thriving. Pollination, pest control, and soil conservation all happen at once requiring a mix of science, technology, and environmental stewardship. Careers in agronomy, environmental science, irrigation engineering, and crop management are all part of this process.

Background Information

During the summer, corn plants in Nebraska grow rapidly. After seeds are planted in the spring, the plants develop roots, leaves, and eventually tassels and silks. These growth stages are essential for pollination, which is how kernels form on each ear of corn. Pollination occurs when pollen from the tassel at the top of the plant lands on the silk of the ear. Each silk that receives pollen has the potential to develop into a kernel. If pollination is incomplete, some kernels will not form, reducing the yield of the crop.

Weather, pests, and plant stress can affect pollination and kernel development. Hot, dry, or windy weather can prevent pollen from reaching the silks. Heavy rain can wash pollen away, and drought stress can cause silks to dry out or not grow properly. Pests like insects may damage leaves, tassels, or silks, which can also reduce pollination. Plant stress from poor soil, disease, or lack of water can make the plant weaker and less able to produce healthy pollen or silks.

Farmers use **STEM skills** to monitor corn growth and prevent problems. They measure plant height, check leaf color, and observe the silks and tassels to ensure pollination is happening. Technology such as soil moisture sensors, weather monitoring systems, and irrigation equipment helps farmers apply water only where and when it is needed, reducing stress on the plants.

Integrated Pest Management (IPM) is another way farmers protect crops. By scouting fields, observing insects, and using natural predators or targeted treatments, farmers reduce damage from pests without harming the environment. Sustainable farming practices, like leaving crop residue on the field, planting cover crops, or using no-till methods, help plants stay healthy and reduce stress.

Monitoring a cornfield in summer is a complex job. Farmers make decisions about irrigation, pest control, and plant health every day. Careers in **agronomy, crop management, irrigation engineering, environmental science, and agricultural technology** all contribute to ensuring the crop grows efficiently and sustainably. Students can see how science, math, and technology work together in a real-world setting to produce food and protect natural resources.

Interest Approach

Ask Students:

1. Why do you think pollination is important for corn plants?
2. How might a farmer know when a plant needs water?
3. What are some ways a farmer can protect the soil between planting seasons?

Activity Procedure

Activity 1 – Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy

1. Pass out a worksheet to each student (included below) and have students answer the first two questions.
2. Play Video 2: From Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy
3. While students watch the video, have them fill in the answers.

Activity 2 – Kernel Count with Yarn Silks and Beads

Procedure:

1. Give each student or group a paper ear of corn.
2. Students glue or tape the yarn strands onto the ear to represent silks.
3. Explain that each silk can become a kernel if it receives pollen.
4. Students “pollinate” the ear by placing a bead on each silk.
5. Introduce environmental challenges:
6. Mark a few silks as “stressed” (drought, pests, wind) that cannot receive pollen.
7. Students pollinate only the remaining silks.
8. Count how many silks successfully received pollen. This represents how many kernels will develop.

Discussion / Reflection:

- How did “stress” reduce the number of kernels?
- How do weather, pests, or plant stress affect real corn pollination?
- How do farmers use irrigation, pest management, and technology to prevent these losses?

Concept Elaboration and Evaluation

After conducting these activities review and summarize the following key concepts.

- Corn goes through important growth stages during summer, including tasseling and silking.
- Pollination is essential for kernel formation-each silk must receive pollen.
- Sustainable farming practices protect soil, conserve water, and ensure healthy crops for the future.

Extension Activity

Pests and Pesticides in Agriculture

Students identify categories of pests including vertebrates, invertebrates, weeds, or disease and discover how pests affect the growth of crops and how integrated pest management (IPM) is used to control pests. This lesson covers a socioscientific issue and aims to provide students with tools to evaluate science within the context of social and economic points of view.

<https://agclassroom.org/matrix/lessons/403/>

Agricultural Pests

The crops we eat are constantly at risk of harm from pests. But what are these pests? In this activity, students will develop a definition of an agricultural pest that is meaningful to them and identify categories of pests such as insects, rodents, mollusks, weeds, and diseases.

<https://agclassroom.org/matrix/companion-resources/1115/>

Soil Formation & Edible Horizons

Students discover what a soil profile looks like, investigate the composition of soil, and explore the five soil-forming factors and soil horizons.

<https://agclassroom.org/matrix/lessons/750/>

Plant-Soil Interactions (Grades 3-5)

Students discover how plants and soils interact by observing root growth, considering the function of a plant's roots, modeling the movement of water into the roots, and investigating the movement of water and nutrients throughout the plant.

<https://agclassroom.org/matrix/lessons/204/>

Follow-Along Worksheet: Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy

Name: _____ Date: _____

Video Title: *Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy*

Before You Watch: Think About It!

1. What do you think corn plants need in the summer to grow strong?
2. Why might summer weather be both helpful and challenging for farmers?

Part 1: Meet the Farmer

Circle the right answers:

1. What season is this video filmed in?
- Spring - Summer - Winter
2. How tall can corn plants get by mid-summer?
- Knee-high - Shoulder-high or taller - As tall as a house
3. What does each silk on an ear of corn connect to?
- A leaf - A kernel - A root

Part 2: Corn Growth Stages

Fill in the blanks:

1. In June, corn focuses on growing _____ and _____.
2. The _____ at the top of the plant produces pollen.
3. By July, corn can grow _____ to _____ inches in a single night.

Part 3: Pollination

Match the item to its description:

Word

Description

Tassel _____

A. Transfers pollen from tassel to silk

Silk _____

B. Produces pollen at the top of the plant

Pollination _____

C. Connects to a possible kernel

Part 4: Scouting and Pest Management

Check all the things Mitch looks for when scouting his fields:

- ☐ Signs of pests
- ☐ Leaf color and plant height
- ☐ Type of tractor paint
- ☐ Soil moisture and weather patterns

Part 5: Irrigation and Sustainability

1. What type of irrigation system does Mitch use?

- ☐ Flood Irrigation ☐ Center Pivot ☐ Hand watering with hoses

2. What tools help Mitch decide when to irrigate? (select all that apply)

- ☐ Soil moisture sensors ☐ A coin flip ☐ Weather data

3. Name one practice Mitch uses to protect soil health:

Reflect: A Day in the Life of a Corn Silk!

Write a short story (3–5 sentences) from the point of view of a silk during pollination.

Start with: "I grew from the ear of corn, waiting for pollen to land on me..."

Answer Key: Seedling to Silk: Summer Corn in Action with Sustainability and Agronomy

Before You Watch: Think About It!

1. What do you think corn plants need in the summer to grow strong?

Answers will vary: *water, sunlight, nutrients, healthy soil, etc.*

2. Why might summer weather be both helpful and challenging for farmers?

Answers will vary: *hot weather can speed growth but also cause stress; drought can hurt pollination; storms or wind can damage plants*

Part 1: Meet the Farmer

Circle the right answers:

1. What season is this video filmed in?

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2. How tall can corn plants get by mid-summer?

- Knee-high - Shoulder-high or taller - As tall as a house

3. What does each silk on an ear of corn connect to?

- A leaf - A kernel - A root

Part 2: Corn Growth Stages

Fill in the blanks:

1. In June, corn focuses on growing **roots** and **leaves**.

2. The **tassel** at the top of the plant produces pollen.

3. By July, corn can grow **2** to **3** inches in a single night.

Part 3: Pollination

Match the item to its description:

Word

Description

Tassel **B**

A. Transfers pollen from tassel to silk

Silk **C**

B. Produces pollen at the top of the plant

Pollination **A**

C. Connects to a possible kernel

Part 4: Scouting and Pest Management

Check all the things Mitch looks for when scouting his fields:

- ☒ Signs of pests
- ☒ Leaf color and plant height
- ☐ Type of tractor paint
- ☒ Soil moisture and weather patterns

Part 5: Irrigation and Sustainability

1. What type of irrigation system does Mitch use?

- ☐ Flood Irrigation ☒ Center Pivot ☐ Hand watering with hoses

2. What tools help Mitch decide when to irrigate? (select all that apply)

- ☒ Soil moisture sensors ☐ A coin flip ☐ Weather data

3. Name one practice Mitch uses to protect soil health:

Acceptable answers: no-till or reduced tillage, leaving crop residue, planting cover crops, preventing erosion, conserving water.

Reflect: A Day in the Life of a Corn Silk!

Write a short story (3–5 sentences) from the point of view of a silk during pollination.

(Open-ended – look for creativity and understanding of the planting process)

Example: “I grew from the ear of corn, waiting for pollen to land on me. One warm July morning, the wind carried pollen from a tassel high above. When it touched me, I knew I was helping create a kernel of corn. Soon, the ear I’m on will be full and ready for harvest!”

Activity 2: Corn Cut-Out



