

ACTIVITY SNAPSHOT

SUPPORTING AREAS

Environment, soil health, renewable and nonrenewable resources, science, technology, engineering, math, weather

PURPOSE

Students will explore how Nebraska farmers use STEM to plant corn and care for the land. They will learn how soil preparation, weather data, precision equipment, and math help ensure healthy 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 1: Corn Planting Worksheet

- (1 per student)

Activity 2

- Hands-On Seed Spacing Activity
- Graph paper, pencils, crayons

Video 1: Corn Planting- Science, Technology, Engineering & Math in Action!

Activity Summary

Let's explore how corn gets planted! Students will watch an educational video featuring Nebraska farmer Mitch as he prepares his fields and uses science, technology, engineering, and math (STEM) to plant corn. Students will complete a follow-along worksheet during the video and take part in a hands-on seed spacing activity to apply math concepts used in planting.

Vocabulary Words

Field Corn – Corn used for livestock feed, fuel, and ingredients, not sweet corn.

Planter – A machine that plants seeds into the soil at the correct depth and spacing.

Downforce – Pressure applied to the planter to ensure seeds are placed correctly.

GPS (Global Positioning System) – Technology used to guide tractors and planters accurately across the field.

Key Concepts

- Farmers use STEM every day to plant corn efficiently and successfully.
- Soil must be tested and prepared before planting.
- Precision technology ensures seeds are planted at the right depth and spacing.
- Math is used to calculate seed population, spacing, and inputs.

What's the Connection to Agriculture?

Planting corn is more than just dropping seeds in the ground. It's a scientific and technological process! From analyzing soil to programming planters, farmers like Mitch rely on STEM skills to make smart decisions and grow healthy crops. Careers in agronomy, mechanics, data analysis, and technology are all part of this process.

Background Information

Corn is one of Nebraska's most important crops and plays a major role in feeding people, animals, and fueling our world. Most of the corn grown in Nebraska is field corn, which is used to make livestock feed, ethanol fuel, and thousands of everyday products such as plastic, glue, and batteries. Planting this crop successfully takes careful planning, science, and technology.

Before planting, farmers test their soil to learn what nutrients it needs and how healthy it is. They also check weather forecasts and soil temperature to find the right time to plant. Corn seeds need warm, moist soil, usually around 50 degrees Fahrenheit or higher, to sprout and grow strong roots.

Today's farmers use advanced machines called planters that are equipped with sensors, monitors, and GPS technology. These tools help place each seed at the perfect depth and spacing. This process is part of precision agriculture, where farmers use data and technology to make smart decisions that improve yields and protect natural resources.

Seed population has a big impact on how much corn a farmer can grow. If a farmer plants too few seeds per acre, there will be open spaces in the field where nothing grows. This wastes sunlight, water, and nutrients, so the overall yield is lower. On the other hand, if too many seeds are planted too close together, the plants have to compete for sunlight, water, and nutrients. Each plant may produce smaller ears or none at all. Farmers aim for just the right number of seeds, usually around 32,000 to 36,000 seeds per acre in Nebraska, to make the best use of their space and resources.

GPS technology helps farmers make sure every seed is planted in exactly the right spot. The GPS system guides the tractor and planter so the spacing stays consistent across the field, even when turning or going over uneven ground. GPS also allows farmers to use field maps that show different soil types and productivity zones. In areas with rich soil, the planter can automatically plant more seeds per acre, and in sandy or less-productive spots, it plants fewer. This precision helps farmers save seed, improve efficiency, and grow more corn with fewer inputs.

Interest Approach

Ask Students:

1. Why do farmers look at the weather before planting crops?
2. What tools or machines do you think help a farmer plant seeds?
3. Do you think math might help farmers when they plant corn?

Activity Procedure

Activity 1 – Corn Planting Video

1. Pass out a worksheet to each student (included below) and have students answer the first two questions.
2. Play Video 1: Corn Planting.
3. While students watch the video, have them fill in the answers.

Activity 2 – Hands On Seed Spacing Activity

1. Provide each student or small group with a ruler, graph paper, and corn kernels or beads.
2. Assign a row length to each student and ask students to calculate how many seeds should be planted using a spacing of 6 inches.
3. Students will draw the row and place “seeds”.
4. Discuss how seed population impacts yield and how GPS technology helps farmers do this in real fields. Refer to background information for context.

Concept Elaboration and Evaluation

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

- Farmers test soil to know what nutrients to add
- Technology like GPS and sensors help plant seeds accurately
- STEM careers are involved in all parts of the planting process
- Planting at the right time and with the right spacing affects how much corn grows

Extension Activities

Inherited Traits in the Living Corn Necklace (Grades 3-5)

Students observe the growth of Indian corn and popcorn seeds, observe similarities and differences between the two varieties, and discuss heredity.

<https://agclassroom.org/matrix/lessons/219/>

Seeds, Miraculous Seeds

Students dissect seeds, identify the anatomy and function of seed parts, and classify seeds as monocots or dicots.

<https://agclassroom.org/matrix/lessons/213/>

Follow-Along Worksheet: Corn Planting

Name: _____

Date: _____

Video Title: *Corn Planting*

Before You Watch: Think About It!

1. What do you think a farmer has to do before planting corn?
2. Why might farmers want to wait before planting?

Part 1: Meet the Farmer

Circle the right answers:

1. Planting season is Mitch's:
 - Least favorite job
 - Favorite time of the year
 - Winter hobby
2. What did Mitch study in college?
 - Engineering
 - Business
 - Agronomy
3. What crops do they grow? (Circle all that apply)
 - Popcorn and sweet corn
 - Seed corn and field corn
 - White corn and blue corn

Part 2: Soil Prep and Testing

Fill in the blanks:

1. Before planting, Mitch tests the _____ to check for nutrients
2. He sends soil samples to a _____ for analysis.
3. Mitch works with an _____ to decide what nutrients to add.

Part 3: Timing and Weather

Match the item to its description:

Word

Description

50 Degrees F _____

A. Helps predict rain or cold weather

Soil Moisture _____

B. Best temperature for soil before planting

Forecast _____

C. Must be checked so equipment doesn't get stuck

Part 4: Using Math in the Field

Check all the ways Mitch uses math on the farm:

- ☐ To calculate how much milk cows need
- ☐ To figure out how many seeds to plant per acre
- ☐ To measure how much fertilizer to apply
- ☐ To wait for higher market prices

Part 5: First Signs of Growth

Circle the right answers:

1. How many days after planting does Mitch usually see sprouts?

- 2-3 days - 7-10 days - 30 days

2. What does Mitch check before planting to make sure the seeds sprout?

- Soil temperature - Color of the corn - Type of tractor

3. How does Mitch describe seeing the first sprouts in his field?

Reflect: Tell the Story of a Kernel!

Write a short story (3-5 sentences) from the point of view of a corn seed being planted by Mitch's planter.

Start with: "I was loaded into the planter and..."

Answer Key: Corn Planting

Before You Watch: Think About It!

1. What do you think a farmer has to do before planting corn?

Answers will vary: *check the soil, decide how many seeds to plant, etc.*

2. Why might farmers want to wait before planting?

Answers will vary: *to plant in better weather conditions*

Part 1: Meet the Farmer

Circle the right answers:

1. Planting season is Mitch's:

- Least favorite job

- Favorite time of the year

- Winter hobby

2. What did Mitch study in college?

- Engineering

- Business

- Agronomy

3. What crops do they grow? (Circle all that apply)

- Popcorn and sweet corn

- Seed corn and field corn

- White corn and blue corn

Part 2: Soil Prep and Testing

Fill in the blanks:

1. Before planting, Mitch tests the **soil** to check for nutrients

2. He sends soil samples to a **lab** for analysis.

3. Mitch works with an **Agronomist** to decide what nutrients to add.

Part 3: Timing and Weather

Match the item to its description:

Word

Description

50 Degrees F **B**

A. Helps predict rain or cold weather

Soil Moisture **C**

B. Best temperature for soil before planting

Forecast **A**

C. Must be checked so equipment doesn't get stuck

Part 4: Using Math in the Field

Check all the ways Mitch uses math on the farm:

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2. What does Mitch check before planting to make sure the seeds sprout?

- Soil temperature

- Color of the corn

- Type of tractor

3. How does Mitch describe seeing the first sprouts in his field?

Open-ended: look for responses about pride, excitement, or hope

Reflect: Tell the Story of a Kernel!

Write a short story (3–5 sentences) from the point of view of a corn seed being planted by Mitch's planter.

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

Example: "I was loaded into the planter and gently dropped into the soil at just the right depth. The closing wheels tucked me in, and the soil felt warm and cozy. After a few sunny days and some rain, I started to grow, pushing my green shoot toward the sky. Soon I'll be part of a tall corn plant in Mitch's Nebraska field!"

Activity 2 Examples: Hands-On Seed Spacing

Example 1: Basic Row Calculation

- Row length: 12 feet
- Seed spacing: 6 inches (0.5 feet)
- Calculation:
 $12 \text{ feet} \times 12 \text{ inches} = 144 \text{ inches}$
 $144 \div 6 = 24 \text{ seeds per row}$

Example 2: Longer Row

- Row length: 18 feet
- Seed spacing: 6 inches
- Calculation:
 $18 \times 12 = 216 \text{ inches}$
 $216 \div 6 = 36 \text{ seeds}$

Example 3: Short Row

- Row length: 6 feet
- Seed spacing: 6 inches
- Calculation:
 $6 \times 12 = 72 \text{ inches}$
 $72 \div 6 = 12 \text{ seeds}$