

ACTIVITY SNAPSHOT

SUPPORTING AREAS

Environment, renewable and nonrenewable resources, science, technology.

PURPOSE

Students will understand the process of harvesting corn in the state of Nebraska. To further their interest, they will form a hands on activity and create bioplastic from corn products.

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.5.3.3 Identify examples of how human and natural resources are used to produce goods and services in Nebraska.

SS.5.4.2 Explain how human activity impacts the physical environment of Nebraska.

MATERIALS

Activity 1

Video 3: *Corn Harvest & Bioplastic – Fueling Nebraska and Our Future*

- (1 per student)

Activity 2

- Sandwich-size resealable plastic bags, 1 per group
- Cornstarch (1 tbsp per group)
- Corn Oil (2 drops per group)
- Water (1 tbsp per group)
- Food Coloring (2 drops per group)
- Tablespoons (1 per group)
- Bioplastic Activity Sheet (1 per student)

Video 3: Corn Harvest & Bioplastic – Fueling Nebraska and Our Future

Activity Summary

Let's talk about corn harvest! Students will watch an educational video that details the corn harvest process. After watching a video and completing an interactive worksheet, students will explore how corn can be turned into a renewable bioplastic, showing the connection between agriculture, sustainability, and innovation.

Vocabulary Words

Bioplastic – Plastic made from plants like corn instead of petroleum oil.

Nonrenewable resource – A limited natural resource that cannot be replaced or reproduced within our lifetime.

Renewable resource – A natural resource that can be replaced or replenished in less time than it takes to use it up.

Yield – The amount of corn produced on a specific area of land, usually measured in bushels per acre.

Key Concepts

- Corn is Nebraska's top crop, grown on over 10 million acres.
- Nebraska farmers use technological tools and best practices to conserve natural resources.
- Understanding resource availability and limitations helps students appreciate the balance required to sustainably grow food.

What's the Connection to Agriculture?

Corn harvest is a key agricultural process where farmers collect mature corn to be used for food, animal feed, fuel, and industrial products. Harvesting connects to sustainability and resource management because farmers rely on:

- Healthy soil to grow strong crops
- Fresh water for irrigation
- Technology and science to improve yields and protect natural resources
- Decision-making to determine the best time to harvest efficiently

Corn harvest shows that agriculture is about more than food production; it is about managing the environment responsibly.

Background Information

Corn is Nebraska's number one crop, growing on approximately 10.1 million acres for all purposes in 2024, with about 9.70 million acres harvested for grain. The state's rich soil, irrigation capability, and favorable climate make it one of the top corn-producing regions in the United States. According to the latest data, Nebraska ranks third in U.S. corn production.

By fall, the corn planted in spring has matured. Farmers look for brown, dry stalks and hard kernels with a small dent, called dent corn, when the kernels begin to dry. They also measure kernel moisture. Corn is typically ready to harvest when kernel moisture is around 15 percent, depending on conditions. Farmers harvest using large machines called **combines**, which perform multiple functions. Snouts guide the stalks, snapping rolls remove the ears, rotors separate kernels from the cob, and chopped stalks are returned to the field to enrich the soil.

Once harvested, corn is unloaded into grain carts or trucks, transported to grain bins or directly to feed mills, ethanol plants, or processing facilities. Most Nebraska corn is **field corn** used for feed, fuel, and industrial purposes rather than sweet corn. It is used for animal feed, renewable fuel such as ethanol, exports, and industrial products such as bioplastics, which are materials made from plants instead of petroleum.

Bioplastics show how agriculture and science work together. In the classroom, when students mix and heat cornstarch, oil, and water to form a new substance, they model how scientists and engineers use plant materials to create renewable, sustainable products.

This lesson helps students see how Nebraska farmers use **science, technology, and innovation** to grow food, fuel, and materials while protecting natural resources like soil and water, demonstrating the balance between **agriculture and sustainability**.

Interest Approach

Ask Students:

1. What signs do farmers look for to know when corn is ready to harvest?
2. Have you ever seen a cornfield in the fall? What did it look like?
3. How do farmers harvest thousands of acres of corn quickly?
4. Why is corn so important to Nebraska?
5. What do you think happens to corn after it is harvested?
6. If you had to harvest corn without a machine, how would you do it?

Activity Procedure

Activity 1 – *Corn Harvest & Bioplastic - Fueling Nebraska and Our Future*

1. Pass out a worksheet to each student (included below) and have students answer the first two questions.
2. Play Video 3: *Corn Harvest & Bioplastic - Fueling Nebraska and Our Future* for the class.
3. Students can fill in the answers as they watch the video.

Activity 2 – Corn Bioplastic

1. Write “Bioplastic” on the board and explain that “Bio” means it comes from a living thing: bioplastic is plastic made from plants like corn.
2. Explain that students will make bioplastic using corn-based ingredients.
3. Divide the class into groups of 4–5 students. Provide each group with cornstarch, corn oil, water, food coloring, a resealable sandwich-size bag, and the “Making Bioplastic” activity sheet.

Students add to their bag:

- 1 tablespoon (14 g) cornstarch
 - 1 tablespoon (15 mL) water
 - 2 drops corn oil
 - 2 drops food coloring
1. Seal the bag and mix by rubbing the outside until well combined.
 2. Open slightly to vent and microwave on high for 20–25 seconds.
 3. Carefully remove and cool for a few minutes. While warm, students form their plastic into a ball.
 4. Use the *Physical and Chemical Change* PowerPoint to discuss the chemical change that occurred.
 5. Have students complete the activity sheet and share observations.

Concept Elaboration and Evaluation

After conducting these activities, review and summarize the following key concepts:

- Nebraska's farmers use science, technological tools, and good decision-making when harvesting corn.
- Corn is a renewable crop used for food, fuel, industrial products, and more.
- Agriculture affects how we live, what we eat, and how we care for the environment.

Extension Activities

- Research other products made from Nebraska corn (ethanol, packing peanuts, pet food).
- Create posters showing the life cycle of corn, from seed to product.
- Write a short reflection: "How does corn connect to my life?"
- Invite Nebraska Agriculture in the Classroom in for a grade-specific classroom visit.

A Search for the Source (Grades 3-5)

Students determine that agriculture provides nearly all of the products we rely on in any given day by participating in a relay where they match an everyday item with its "source."

<https://agclassroom.org/matrix/lessons/5/>

Follow-Along Worksheet: Corn Harvest

Name: _____

Date: _____

Video Title: *Corn Harvest & Bioplastic - Fueling Nebraska and Our Future*

Before You Watch: Think About It!

1. Where do you think your cornflakes or popcorn come from?
2. What machines do you think farmers use to harvest corn?

Part 1: Meet the Farmer

Circle the right answers:

1. Mitch Oswald is a:
- Chef - Farmer - Scientist
2. How many generations has his family farmed this land?
- 3rd - 6th - 10th
3. What crops do they grow? (Circle all that apply)
- Corn - Tomatoes - Soybeans - Seed Corn

Part 2: Corn Facts

Fill in the blanks:

1. Nebraska is the _____ largest corn-producing state.
2. Almost all the corn grown is called _____ corn.
3. This kind of corn is used to feed _____ , make _____ , and get sent _____ .

Part 3: When Is Corn Ready?

Match the words to their meanings:

Word

Description

Dent corn _____

A. A tool farmers use to check if corn is dry enough to harvest.

Moisture _____

B. Used to check if corn is dry enough.

Grain tester _____

C. Corn has noticeable indentions in the kernel as it begins to dry.

Part 4: How Do They Harvest?

Fill in the blanks with the correct part of the combine:

- The _____ divide the rows of corn
The _____ pulls the corn ears into the machine.
The _____ feeds corn into the combine.
The _____ spins and separates the kernels from the cob.
The _____ chops up leftover stalks and sends them out the back.

Word Bank

Chopper
Feeder House
Snoot
Rotor
Chains

Part 5: In the Cab

Match the words to their meanings:

Screen Name

What It Does

- | | |
|------------------------|--|
| Yield Monitor _____ | A. Drives the combine automatically. |
| GPS Monitor _____ | B. Shows how much corn is being picked and moisture level. |
| Machine Settings _____ | C. Controls how the combine runs. |
| iPad _____ | D. Helps map and analyze the field. |

Part 6: Moving the Corn

1. What machine carries corn away from the combine?

2. Where does the corn go next? (Circle one)

- A Grocery Store - A Barn - A Semi-Truck

3. What happens to the corn after it goes into the truck?

- It's stored in bins - It's turned into candy - It's fed to chickens right away

Reflect: Tell the Story of a Kernel!

Write a short story (3-5 sentences) from the point of view of a corn kernel.

Start with: "I started out as a tiny seed..."

Answer Key: Corn Harvest

Before You Watch: Think About It!

1. Where do you think your cornflakes or popcorn come from?

Answers will vary: *A farm, cornfield, or a factory that uses corn from farms.*

2. What machines do you think farmers use to harvest corn?

Answers will vary: *Combine, tractor, corn head, grain cart.*

Part 1: Meet the Farmer

Circle the right answers:

1. Mitch Oswald is a:

- Chef - Farmer - Scientist

2. How many generations has his family farmed this land?

- 3rd - 6th - 10th

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

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Part 2: Corn Facts

Fill in the blanks:

1. Nebraska is the **3rd** largest corn-producing state.

2. Almost all the corn grown is called **field** corn.

3. This kind of corn is used to feed **animals**, make **ethanol**, and get sent **around the world**.

Part 3: When Is Corn Ready?

Match the words to their meanings:

<u>Word</u>	<u>Description</u>
Dent corn C	A. A tool farmers use to check if corn is dry enough to harvest.
Moisture B	B. Used to check if corn is dry enough.
Grain tester A	C. Corn has noticeable indentions in the kernel as it begins to dry.

Part 4: How Do They Harvest?

Fill in the blanks with the correct part of the combine:

The **snoots** divide the rows of corn
The **chain** pulls the corn ears into the machine.
The **feeder house** feeds corn into the combine.
The **rotor** spins and separates the kernels from the cob.
The **chopper** chops up leftover stalks and sends them out the back.

Word Bank
Chopper
Feeder House
Snoot
Rotor
Chains

Part 5: In the Cab

Match the words to their meanings:

<u>Screen Name</u>	<u>What It Does</u>
Yield Monitor B	A. Drives the combine automatically.
GPS Monitor A	B. Shows how much corn is being picked and moisture level.
Machine Settings C	C. Controls how the combine runs.
iPad D	D. Helps map and analyze the field.

Reflect: Tell the Story of a Kernel!

Write a short story (3–5 sentences) from the point of view of a corn kernel.

(Open-ended – look for creativity, facts from the video, and sequencing like growing - harvested - stored)

Example: “I started out as a tiny seed planted in the soil. I grew into a tall corn stalk in the Nebraska sunshine. One day, the combine came and picked me. My kernels were taken off and stored in a big grain bin. I can’t wait to become something delicious like cornflakes!”