

cobblestone®

FOOD INVENTIONS

In this issue, students investigate how various types of innovations have changed the ways that food is grown and made available to the world.

CONVERSATION QUESTION

How does innovation change the way people live?

TEACHING OBJECTIVES

- Students will learn how technological advances impact agriculture.
- Students will explain likely causes and effects of events and developments.
- Students will identify examples of resources used to produce goods.
- Students will classify a series of historical developments as examples of continuities or changes.
- Students will conduct research.
- Students will create a timeline.
- Students will give a presentation.



In addition to supplemental materials focused on core Social Studies skills, this flexible teaching tool offers vocabulary-building activities, questions for discussion, and cross-curricular activities.

SELECTIONS

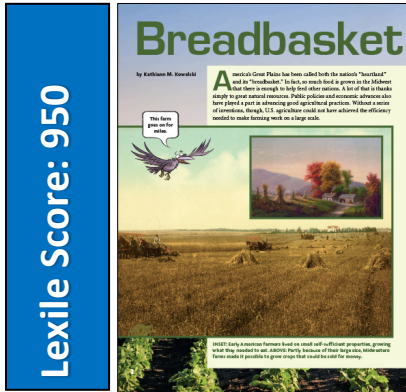
- **Breadbasket to the World**
Expository Nonfiction, ~950L
- **From Farm to Table**
Expository Nonfiction, ~950L
- **Experimenting with Plants, Peanuts, and Ice**
Expository Nonfiction, ~1150L

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Breadbasket to the World

pp. 2–6, Expository Nonfiction

Explore how farmers in the American Midwest were able to rise from self-sufficient growers to providing food for much of the world by innovating.



RESOURCES

- Cause and Effect

OBJECTIVES

- Students will read and analyze a nonfiction article.
- Students will learn how technological advances impact agriculture.
- Students will explain likely causes and effects of events and developments.
- Students will conduct research.

KEY VOCABULARY

- **efficiency** (p. 2) a state of achieving maximum productivity with minimum wasted effort
- **self-scouring** (p. 3) used to describe a device that cleans itself as it is used
- **precision agriculture** (p. 5) a farming method based on using satellites, computers, and wireless technology to observe, measure, and respond to specific conditions in fields

ENGAGE

Conversation Question: How does innovation change the way people live?

Have students hypothesize about how food was grown before modern technology became available (i.e., mechanical and power-based technologies). What tools and resources did a farmer need to grow food? How challenging might the process have been? Then ask students to list any technologies that farmers may use today that make their jobs easier. Finally, ask them what possible result could come from farmers having better tools and resources.

INTRODUCE VOCABULARY

Review the vocabulary words and definitions. Then display the sentences below and have students use the vocabulary words to complete them. Finally, remind students to look for the vocabulary words as they read the story.

1. When John Deere invented the _____ plow, he helped to increase a farmer's _____.
2. The practice of _____ has blossomed due to the continued increase in _____ that such innovations bring to farmers.

READ & DISCUSS

Have students read the article with a partner. Then use these prompts for discussion:

1. How did John Deere's plow impact farming in the Midwest?
2. How did gasoline-powered tractors allow farmers to become more efficient?
3. Why is precision agriculture considered to be the future of agriculture?

CONCEPT/SKILL FOCUS: Explain Causes/Effects

INSTRUCT: Explain that the article mentions several cause-effect relationships. Inform students that they will need to reread the article with a partner to find these cause-effect relationships.

ASSESS: Instruct students to use the *Cause and Effect* graphic organizer to note different innovations mentioned in the article and describe the benefits that each invention provided to farmers. When students have finished their work, have them share with the class to ensure proper understanding of these specific cause-effect relationships.

EXTEND

English Language Arts Have students use print and digital sources to learn about either "farming before 1800s" or "the future of farming." Instruct them to identify at least ten details about the topic. Then hold a class discussion where students share their findings and discuss the importance of innovation in agriculture.

Name _____

Cause and Effect

One event directly leads to another—this is the simplest explanation of a cause-and-effect relationship. Innovation works in a similar way—one innovation typically leads to another. Starting with the self-scouring plow invented by John Deere, record your ideas about how it helped farmers. Then fill in the rest of the chart below with inventions that marked an improvement over the ones before it, including details of their benefits.

hauled plow Used by farmers before the 1800s	<ul style="list-style-type: none">• Required manual labor, including the use of farm animals.• Worked poorly in the Midwest because it couldn't cut through thick prairie grass, and soil clumped on the blades.
self-scouring plow Invented by John Deere	

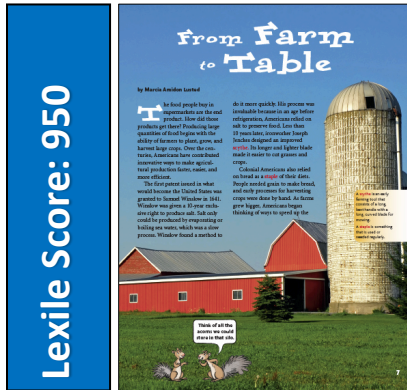
SUMMARIZE In a few sentences, summarize how innovations change how and what farmers do.

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From Farm to Table

pp. 7–11, Expository Nonfiction

Discover how agricultural practices have evolved from labor-intensive, relatively slow methods in the past to fast, efficient, computer-driven methods today.



OBJECTIVES

- Students will read and analyze a nonfiction article.
- Students will learn how technological advances impact agriculture.
- Students will identify examples of resources used to produce goods.
- Students will create a timeline.

KEY VOCABULARY

- **automated (p. 8)** a process that occurs by itself, usually through the use of mechanical processes
- **mechanical (p. 8)** of a system that manages the power of forces and movements to accomplish a task
- **artificial intelligence (p. 11)** computer systems able to perform tasks that normally require human intelligence, typically through an ability to analyze and predict information

ENGAGE

Conversation Question: How does innovation change the way people live?

Ask students what computers and agricultural practices have in common. Prompt students to realize that modern agricultural practices use technologies, such as satellites and artificial intelligence, to help improve how much food is produced, how efficiently it is produced, and how quickly it can be prepared and transported across the world.

INTRODUCE VOCABULARY

Define each word with students. Then have students work in small groups to create a single sentence that uses all three words. Finally, tell students to look for these words as they read the article.

READ & DISCUSS

Have students read the article with a partner. Then use these prompts for discussion:

1. Why did the invention of the water-powered mill lead to further innovation?
2. What inventions revolutionized how grains were harvested, threshed, and cleaned?
3. Why are farmers able to transport dairy and meat products year-round today?

CONCEPT/SKILL FOCUS: Identify Resources

INSTRUCT: Explain that a variety of human, animal, and machine resources are used to grow, harvest, prepare, and transport food. Provide students with simple examples of each type of resource used in agriculture.

ASSESS: Have students work in pairs to find two examples of how each of these three types of resources were, or are, used to produce food: human, animal, and machine. Then discuss with the class potential ways that different types of resources might be used in the future to change how food is grown, harvested, prepared for shipment, and transported.

EXTEND

Social Studies The article discusses key events that led to changes in agricultural practices. Have students identify at least five major innovations (i.e., events) affecting this development and create an annotated timeline (i.e., timeline where dates have labeled events and short descriptions of what occurred).

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Experimenting with Plants, Peanuts, and Ice

pp. 18–21, Expository Nonfiction

Find out how experimentation, innovation, and research have the potential to revolutionize how food is grown, transported, and consumed.



OBJECTIVES

- Students will read and analyze a nonfiction article.
- Students will learn how technological advances impact agriculture.
- Students will classify a series of historical developments as examples of continuities or changes.
- Students will give a presentation.

KEY VOCABULARY

- **varieties** (p. 18) kinds of things
- **cross-bred** (p. 18) mixed two kinds of plants to form a new one
- **characteristics** (p. 19) qualities or traits

ENGAGE

Conversation Question: How do innovations change the way people live?

Ask students to think about their refrigerator and the food items in it. Ask them how long those foods might last if they were left out on the counter. Then tell them that before modern refrigeration, many foods that were grown in rural areas had to be transported to cities, where most people lived. Invite students to hypothesize how those foods were able to be transported without spoiling.

INTRODUCE VOCABULARY

Together, review the vocabulary words and read them aloud. Then ask students to make predictions about the topic of the text using the vocabulary words. If necessary, help students guess the topic by revealing the title of the article.

READ & DISCUSS

Have students read the article with a partner. Then use these prompts for discussion:

1. How are different varieties of foods developed?
2. Why are crop-rotation and composting beneficial for farmers?
3. How has the development of standards for preserving food helped to reduce the amount of food spoilage?

CONCEPT/SKILL FOCUS: Classify Events

INSTRUCT: Explain to students that certain events happen in history that can be considered important, but don't represent a change in how things have been done or thought about in the past. These are known as *historical continuities*. Alternatively, some events do represent a change in how things have been done or thought about in the past. These are known as *historical changes*.

ASSESS: Have students work in pairs to find examples of historical continuities and historical changes in the article. Ask pairs to present their examples to the class for discussion.

EXTEND

Social Studies The article discusses various ways people create change in agricultural practices (e.g., experimentation, innovation, and research). Instruct students to use print and digital sources to research *one specific food item* and identify details related to experiments, innovations, and/or research that helped make that food item available today. Then have them orally present their discoveries to the class, using props or visual aids as necessary.