

## Why Agriculture?

Teaching about agriculture in Iowa is an ideal way for students to learn what their state is all about and provide real-life connections to science, math, and social studies concepts. Agriculture is a topic that students can easily connect to because they encounter it often. Who doesn't enjoy talking about food? Nearly everything we eat, wear, use -- even the fuel that powers the cars and buses we ride in -- comes from plants and animals grown on farms. Agriculture provides perfect real-world connections to STEM and makes learning relevant to students.

Helping students understand the farm-to-table connection is important in our consumer-driven society. Teaching students to be agriculturally literate connects their learning to everyday life. That is what the *Iowa Ag Today* series is all about.

## About Iowa Ag Today

*Iowa Ag Today* is a great supplement to your science, social studies, and language arts curriculum. Each issue is chock-full of discussion topics, new vocabulary, and other materials that you can easily integrate into lessons. Major highlights of each issue include:

### Issue 1: Agriculture is Everywhere

- What is agriculture?
- Iowa agriculture crops, livestock, & products
- Agricultural careers

### Issue 2: Food, Health & Lifestyle

- Nutrition
- Food safety

### Issue 3: Agriculture and the Environment

- Natural resource management
- Agriculture in global ecosystems

### Issue 4: Culture, Society, Economy & Geography

- Agriculture and the development of civilizations
- Iowa's agriculture innovators
- Geography, global trade and economics

### Issue 5: Science, Technology, Engineering & Math

- Science and technology to increase food production
- Safe, healthy, abundant food
- Sustainable systems for a growing population

### Issue 6: Plants & Animals for Food, Fiber & Energy

- Domestication of plants and animals
- Renewable and non-renewable resources
- Plant and animal needs
- Biotechnology

## Integration Ideas

- In small groups, analyze weather data from states in different regions of the U.S. As a class, compare findings and discuss how the weather differences correlate to the map (page 4-5).
- Identify a problem and design a solution to help the problem. Problems could relate to farming efficiency, the environment, nutrition, or other agricultural issues.
- Compose an informational writing piece explaining why a particular state or region is ideal for growing a certain crop. Use evidence from pages 4 & 5 and the state agriculture profiles found here: <https://goo.gl/q4j1T5>
- Develop a list of agriculture businesses in your community. Invite an agriculture lender from a local bank or someone from another agriculture business to speak to your class about how agriculture impacts your community.
- Using Britannica School from Iowa AEA Online or other sources research an innovative Iowan (page 8). Write an informative paragraph explaining their contributions to agriculture.
- Ask students to annotate or make "thinking tracks" in the margins as they read *Ag Today* jotting down thoughts and questions. Then discuss their thinking tracks in small groups.

## Alignment with Standards and Lexile

Subject	Code	Standard Lexile Measure = 800L
		Essential Concept or Skill/Standard
Social Studies	SS.4.10	Describe how societies have changed in the past and continue to change.
Social Studies	SS.4.11	Describe how scarcity requires a person to make a choice and identify costs associated with that choice.
Social Studies	SS.4.12	Using historical and/or local examples, explain how competition has influenced the production of goods and services.
Social Studies	SS.4.14	Explain the reasons why the costs of goods and services rise and fall.
Social Studies	SS.4.15	Identify factors that can influence people's different spending and saving choices.
Social Studies	SS.4.17	Create a geographic representation to illustrate how the natural resources in an area affect the decisions people make.
Social Studies	SS.4.24	Develop a claim about the past and cite evidence to support it.
Social Studies	SS.4.25	Analyze the impact of technological changes in Iowa, across time and place
Social Studies	SS.4.26	Explain how Iowa's agriculture has changed over time.

# Glossary

Some words in *Ag Today* may be unfamiliar to your students. These words often appear in bold type. Many are defined in the articles. Words you might wish to review with your students after reading the magazine are: **agriculture businesses** (pg. 1), **genetics, yield, hybrid, field corn** (pg. 2), **Three Sisters, innovators, hybrid, Green Revolution** (pg. 3), **supply, demand, avian influenza** (pg. 6), **credit, loans, lenders, interest, inputs, cooperative** (pg. 7), **George Washington Carver, Henry A. Wallace, Norman Borlaug, famine** (pg. 8).

## Discussion Prompters

**Cover** (Agriculture in Society)

1. Can you name a couple different types of agriculture businesses? (*Implement dealers like John Deere and Kinze dealers, seed and fertilizer suppliers like cooperatives, precision agriculture like Ag Leader Technology, meat processors like Iowa Select, etc.*)
2. How has agriculture changed people? How have people changed agriculture?  
(*What we grow affects what we eat and celebrate – think of corn festivals in Iowa versus strawberry festivals in Florida. People have changed agriculture making it more efficient and lessening its impact on the environment.*)

**Student Page 2** (DuPont Pioneer)

1. What was Henry A. Wallace known for? (*He started the Hi-Bred Corn Co. and went on to become the U.S. secretary of agriculture*)
2. What is a hybrid? (*cross of two plants with different traits.*)
3. What other types of hybrid seeds does Pioneer sell to farmers? (*alfalfa, canola, cotton, mustard, millet, rice, sorghum, soybeans, sunflower, wheat*)

**Student Page 3** (Agriculture History)

1. Why do you think Native Americans grew the Three Sisters as their primary crops? (*the three plants grew well together. Beans increased the fertility of the soil. Squash is a vine and grow in between the corn stalks*)
2. How did Norman Borlaug help start the Green Revolution? (*He helped develop new strains of wheat and rice that led to increased production.*)
3. Can you name other historical events that happened at the same time as events on the timeline?

**Student Pages 4 and 5** (Agriculture across the U.S.)

1. Why is the West Coast a good place to raise fruit, nuts, and vegetables? (*a temperate coastal climate provides good temperatures and adequate rainfall*)
2. Why do farmers in the Rocky Mountains specialize in beef and sheep? (*Mountainous terrain cannot be plowed for crops. Livestock can graze land that cannot grow crops.*)
3. Why is so much pork produced in the Midwest? (*Pigs eat corn and soybeans which are grown in the Midwest. It is economical to raise animals close to the feed.*)
4. Where in the U.S. does rice and cotton grow best? (*in the south*)

5. In what state are most mushrooms grown?  
(*Pennsylvania. Mushrooms grow in a mixture of straw and horse manure. Pennsylvania has a lot of both.*)

**Student Page 6** (Gallon of Milk)

1. Can you explain why the price of milk might change week to week? (*Prices change based on supply and demand.*)
2. Did the price of corn rise or fall in 2015? Why?  
(*Corn prices fell. A good growing year resulted in an increased supply of corn.*)

**Student Page 7** (Bank)

1. Farm machinery is very expensive. What else could you buy for \$350,000? (*a large house, 10 pickup trucks or cars, 5 college degrees, etc.*)
2. How can farmers purchase land and machinery? (*They can borrow money from a bank or financial institution.*)
3. If a farmer buys a combine for \$350,000 and has to pay 10% of the loan back every year, how much would they pay the first year? ( $\$350,000 \times .1 = \$35,000$ )

**Student Page 8** (3 lowans)

1. How did George Washington Carver help improve agriculture? (*He discovered that rotating soybeans with corn and peanuts with cotton increased yields of corn and cotton.*)
2. Is there a person in your life who influenced you? How do you make a difference to others?
3. Who are some other famous lowans who improved agriculture?
  - A. Jesse Hiatt – discovered the Red Delicious apple
  - B. Jessie Field Shambaugh – known as the ‘Mother of 4-H Clubs’
  - C. John Kinzenbaw – founded Kinze Manufacturing and is a leader in implement technology
  - D. Ada Hayden – Professor at Iowa State University and Curator of the Herbarium
  - E. Griffith Buck – Professor at Iowa State University who created more than 80 varieties of roses
  - F. Mary Garst – leader in the Iowa cattle industry and helped bring Russian leader Nikita Khrushchev to visit Iowa
  - G. John Froelich – invented the gas powered tractor

## Show what you know - Key

1. Geography determines what animals and plants are found naturally and can be grown in an area. People eat more of what is close by.
2. Johnston, IA
3. \$3.30
4. Livestock feed, fuel (ethanol), and food (corn chips, corn meal, corn syrup, etc.)
5. Florida because of the warm climate
6. 123 years
7. False. Carver researched peanuts and cotton. He taught farmers to rotate corn and cotton plantings with these two legumes.
8. Price of a product goes up when there is little available compared to the need for it. Price of a product goes down supply is high and demand is low.
9. B. Georgia
10. A cross of two plants with different traits.

Name: \_\_\_\_\_

Check one:

Pretest

Post-test

# Show what you know!

*Take this short quiz before you read Ag Today, then again after reading the magazine. See the improvement!*

1.

In your own words, explain how geography influences what people eat. For example, people in California eat a lot of fish and people in Asia eat a lot of rice.

2.

Where would you find the headquarters for DuPont Pioneer? \_\_\_\_\_

3.

In 2013, the price of corn was around \$7 per bushel. In 2015, the price of corn was around \$3.70 per bushel. What is the price difference? Show your thinking process.

4.

List two uses for field corn. \_\_\_\_\_

5.

Which state would have a climate suitable for growing oranges? Explain why you think oranges would grow well there.

6.

How many years after John Deere invented the plow, did the Green Revolution occur? Show your thinking process.

7.

True or False - George Washington Carver researched wheat and rice. What is your evidence?

8.

In your own words, describe supply and demand. How does it affect the price of products we buy?

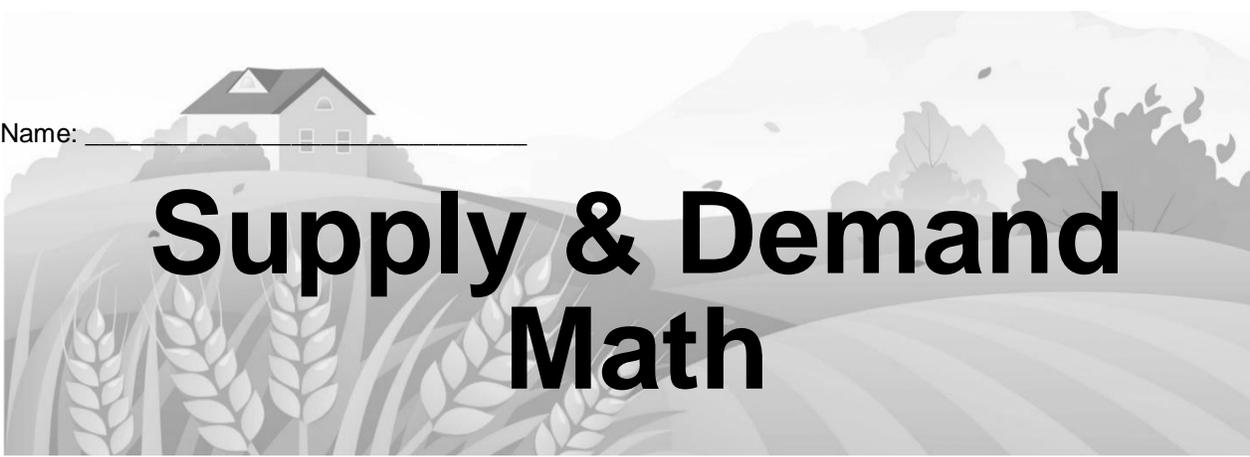
9.

Which state would you find cotton fields?  
A. Montana   B. Georgia   C. California

10.

What is a hybrid?

Name: \_\_\_\_\_



# Supply & Demand Math

In 2015, many turkeys and chickens in Iowa became sick with a disease known as **avian influenza** or bird flu. Because many of these birds died, there weren't as many eggs being laid. This reduced the supply of eggs in grocery stores. People didn't stop eating eggs. The eggs that were available became more valuable. Prices in the grocery store went up from \$1.30 per dozen to almost \$1.90 per dozen.

- How much did the price increase? Show your thinking process.
- If a family uses two dozen eggs per month, how much more would they spend on eggs each month?
- How much more would they spend on eggs per year?

In the space below, write a story problem involving supply and demand for a friend to solve.