

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

- Use the careers listed on the back cover to draw connections between agriculture and STEM.
- Identify the STEM involved in producing and using Iowa's Powerhouse Crops & Livestock (pg. 4 & 5).
- Discuss how advances in agriculture technology have changed and impact the local and global economies.
- Explore supply and demand as it relates to food and agriculture.
- Ask students to identify key ideas and details and build their vocabulary through Ag Today's informational text.
- 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.
- Use agriculture for creative and argumentative writing and group discussions. e.g. Explain why agriculture is important to someone who has expressed an opposing point of view.

Alignment with Standards and Lexile

Subject	Code	Lexile Measure = 840L
		Essential Concept and Skill
Science	4-PS3-2	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
Science	4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
Science	4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
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, food, fiber, fuel** (cover); **water cycle, terraces, buffer strips, erosion** (pg. 2); **field corn, legumes, cows, hen, tom, rooster, broiler, layer** (pgs. 4&5); **biotechnology, genetics, fertilizer, GPS, precision agriculture, wind turbines, wind farms, renewable fuels, solar energy** (pg. 6); **nutrition, protein, grains** (pg. 7); **conservationist, lend** (pg. 8)

Discussion Prompters

Cover (Agriculture is Everywhere)

1. Agriculture is everywhere. What are the agriculture connections on this page? (*Food, backpack, clothing, paper, pencils, books, school bus (tires, fuel, upholstery), and soap.*)
2. Why is it important for all people to know about agriculture? (*We all depend on agriculture for food, clothing and shelter. It's important to understand how our needs are supplied as we make decisions about using land, protecting resources, keeping food safe and much more.*)

Student Page 2 (Agriculture and the Environment)

1. Describe the water cycle. (*Water evaporates into the air forming clouds moving around the globe. Water falls from the clouds as snow or rain onto the land. Water runs off or through the land into rivers and lakes and eventually oceans. Sun will warm the oceans causing evaporation.*)
2. Why is it important to keep water clean? (*Too much pollution can cause problems for humans drinking water, fish and other animals living in the water and even swimming in the water.*)
3. How do we keep water clean? (*Allowing for natural filtration through soil and plants and reducing pollutants that are put into water.*)
4. How can you help protect the soil? (*Minimize exposed soil and prevent excess water that could lead to runoff.*)

Student Page 3 (Culture, Society, Economy, & Geography)

1. What companies have facilities located in each of these Iowa cities? (*Ames – Barilla; Cedar Rapids – Quaker Oats; Des Moines – Anderson Erikson; Dubuque – Bimbo Bakeries; Le Mars – Blue Bunny Ice Cream; Mt. Pleasant – West Liberty Foods; Muscatine – Heinz; Osceola – Hormel; Sioux City – Jolly Time Popcorn*)
2. What other agribusinesses are located in Iowa? (*DuPont Pioneer, John Deere, Nationwide, Firestone Farm Tires, etc.*)
3. What other agriculture and food products are produced in Iowa? (*tractors, combines, cheese, salsa, etc.*)

Student Pages 4 and 5 (Plants and Animals for Food, Fiber & Energy)

1. What have you eaten or used today that came from plants and animals? (*clothes, toothpaste, food, pencil, paper, toilet paper, towels, crayons, leather shoes, etc.*)
2. What is the difference between field corn and sweet corn? (*Sweet corn is eaten fresh. Field corn is harvested dry and can be turned into hundreds of other*

food and industrial products.)

3. Why do corn and soybeans thrive in Iowa? (*soil and climate is ideal*)
4. How are dairy cattle and beef cattle used differently? (*beef cattle are raised specifically for their meat, dairy cattle are prime milk producers*)
5. What different purposes are chickens raised for? (*broilers are raised specifically for their meat, layers are raised to produce eggs*)

Student Page 6 (Science, Technology, Engineering & Mathematics)

1. What are two reasons scientists might use biotechnology when studying plants? (*make the plants disease resistant, make plants drought resistant, make plants more nutritious, make the plants more productive, etc.*)
2. How can using technology help farmers improve? (*apply less fertilizer by being more precise*)
3. Describe three types of renewable energy farmers use? (*solar energy – from the sun, wind energy – from wind turbines, and biofuels – from plants*)

Student Page 7 (Food, Health & Lifestyle)

1. Why should you follow the MyPlate guidelines to eating? (*helps guide healthy eating by avoiding oversized portions, eating more fruits and vegetables, eating a big variety of proteins and eating calcium rich foods.*)
2. What are some protein options or alternatives other than meat? (*beans, peas, lentils, wheat, whole oats, millet, quinoa*)

Student Page 8 (Career Corner)

1. Who do you know that has a career in or related to agriculture?
2. How many different careers related to agriculture can you name? (*farm news reporter, grain broker, farm insurance agent, agricultural lender, food distribution manager, agriculture education teacher, soil conservationist, agriculture engineer, food engineer, crop specialist, plant breeder, veterinarian, livestock production manager, food chemist, food researcher, dairy scientist, equine scientist, greenhouse manager, floral designer, agricultural aviator, animal nutritionist, meat scientist, beekeeper, etc.*)

Show what you know - Key

1. Water cycle
2. False – Agriculture encompasses all of the research, growing, selling, marketing, and transportation of plants and animals for food, fiber, and fuel.
3. Solar energy
4. French fries
5. Iowa
6. Cover bare soil with plant matter or put plants in the soil to hold the soil in place
7. 500 gallons of water weigh 2 tons or 4,000 pounds
8. GPS can help steer the tractor
9. Bacon
10. Dairy cattle

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.

What is the process in which the earth recycles water over and over again and changes water molecules from a solid to liquid to gas? _____

2.

Agriculture is only about farming. Circle one: True False
Explain why you think this.

3.

Some farmers use the sun to power their lights and heaters in barns. What type of energy are they using? _____

4.

Which of the following is NOT a good source of protein?

- a. Beans
- b. French fries
- c. Meat

5.

Which of the following states is the top egg producing state?

- a. Minnesota
- b. Texas
- c. Iowa

6.

One way to take care of our soils is to stay on sidewalks and trails when walking. What is another way you can take care of the soil? Explain.

7.

A gallon of water weighs 8 pounds! How many gallons of water are in 2 tons? (Remember: 1 ton = 2,000 pounds) Show your thinking process.

8.

Describe one way that technology is used in agriculture.

9.

The meat from pigs is called pork. Which of the following is a pork product?

- a. Bacon
- b. Hamburger
- c. Steak

10.

Which type of cattle do we get milk from? (Circle) Beef cattle or Dairy cattle

Name: _____

Agriculture Everyday

Read the story below and circle the things that came from agriculture.

Sam did not want to get out of bed. The air was cold. He was warm under his soft cotton sheets and blanket. When Sam finally got up, the wood floor in his bedroom was cold. He wished his room had carpet. He quickly ran across the room and grabbed socks, underwear, jeans, and a sweatshirt out of his old wooden dresser.

Next, he headed to the bathroom to shower. His mom opened the bathroom door to remind him to wash well. Sam didn't always remember to use soap and shampoo. He quickly finished his shower, grabbed a fluffy warm towel and dried off. He got dressed, brushed his teeth with his favorite toothpaste, and headed to the kitchen.

Sam usually ate cereal or yogurt for breakfast, but today his mom was making pancakes and sausage. Sam's favorite! He ate every last bite and washed it down with a glass of orange juice. He was still hungry. He took a banana and granola bar to eat on the way to school.

Sam sat at the table and read his favorite comic in the newspaper until it was time to leave. In a few minutes, Sam put on his coat, hat, and wool mittens. He grabbed his lunch and backpack, hugged his mom good-bye, and headed out the door to the bus stop.

Once Sam got to school....

How many of the items in the story came from agriculture? _____

Use the space below and back of this page to write a short story about the rest of Sam's day. What did Sam do at school? Include at least 5 things from agriculture in your story. Hint: Read Iowa Ag Today for ideas.