IOWA ag TODAY
EXPLORING THE CONNECTION BETWEEN AGRICULTURE AND YOU!

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Iowa Agriculture Literacy Foundation

Teacher Guide
Issue 1

Why Agriculture?

Teaching about agriculture in Iowa is an ideal way for students to learn what their state is all about. It provides real-life connections to science, math, literacy, 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.
- Discuss how advances in agriculture technology have changed and impact the local and global economies.
- Provide students tools such as sticky notes or mind mapping to identify key ideas and details in their reading and build their vocabulary through Ag Today's informational text.
- Ask students to make "thinking tracks" in the margins as they read Ag Today. Have them jot down thoughts and questions. Then discuss their thinking tracks in small groups.
- Use the links on the virtual version of Iowa Ag Today at www.iowaagliteracy.org to extend learning.

Please leave this resource a review by scanning the QR code or going to:
https://form.jotform.com/220410963259050

Alignment with Standards and Lexile

Subject	Code	Lexile Measure = 860L
		Essential Concept and Skill
Science	3-5-ETS1-2.	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
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.
21st Century	21.3-5.HL.3	Demonstrate critical literacy/thinking skills related to personal, family, and community wellness.

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, renewable resource** (cover); **biosphere, crop, livestock, natural ecosystem, agroecosystem, hydrosphere, atmosphere, geosphere** (pg. 2); **field corn, legumes, beef, dairy, hen, tom, broiler, laying hen** (pgs. 4&5); **auger, irrigate** (p. 6); **omnivore, carbohydrate** (pg. 7)

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 (Celebrating our Natural Resources)

1. Describe a natural ecosystem, what are the different types of natural ecosystems? *(Forest, lake, river, prairie are examples of natural ecosystems. The main purpose of a natural ecosystem is to provide food and shelter for wildlife and animals that are not domesticated. They are also used for human entertainment through recreation.)*
2. What are the different types of agroecosystems? *(Cattle, hogs, chickens, turkeys, corn, soybeans, apple orchards, and pumpkin patches are a few examples of agroecosystems.)*
3. How do natural ecosystems and agroecosystems compare? What is similar and different? *(Similar: have animals and/or plants, help feed or clothe people, provide entertainment, interact with Earth spheres. Different: Agroecosystem is made up of domestic animals and plants. Natural ecosystem contains wild animals and plants.)*
4. Describe how farmers may help to protect natural resources? *(Minimize exposed soil and prevent excess water that could lead to runoff, buffer strips, cover crops.)*

Student Page 3 (Made in Iowa)

1. What agriculture commodities are used to make the byproducts you see on the map? (*Pork, dairy, corn, soybeans, poultry, turkey, bees, shrimp, plants*)
2. What other agribusinesses are in Iowa? *(Corteva Agriscience, John Deere, Nationwide, etc.)*
3. Which food is your favorite on the map? How do you think it would travel to get to you? *(Answers will vary based on student background.)*

Student Pages 4 and 5 (Iowa's Top Crops and Livestock)

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. Turkeys are the only native meat animal in North America. But we tend to associate turkey with Thanksgiving. Why do you think this bird became an important part of many holidays? *(Answers will vary based on student background*)
6. 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 structures do you think are important for soybean growth and reproduction? (*Answers will vary*)
2. Farmers face many problems. Engineer a machine that could help solve a problem for a farmer. *(Answers will vary based on student background. Examples of problems: drought, wind, erosion, run-off, etc.)*
3. How can using technology help farmers improve? *(be more precise, time efficiency, etc.)*
4. Describe the role of engineers in agriculture. What problems do they help to solve? (*Answers vary based on student prior knowledge*)
5. Describe different types of technology farmers use? *(Drones-to assess fields; combine computers-determine yield during harvest; belts & augers- to remove seed from the main plant)*

Student Page 7 (Food, Health & Lifestyle)

1. Why should you follow the MyPlate guidelines to eating? (*Provides guidance for a balanced diet.)*
2. What are other sources of protein other than meat? *(Beans, peas, lentils, nuts, wheat, whole oats, millet, quinoa)*

Student Page 8 (Career Corner)

1. Who do you know that has a career in or related to agriculture? (*Answers will vary*)
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, food engineer, crop specialist, plant breeder, veterinarian, livestock production manager, food chemist, food researcher, dairy scientist, equine scientist, greenhouse manager, floral designer, beekeeper, etc.)*

Show what you know - Key

1. Answers will vary. Look for key words identifying differences between agroecosystems and natural ecosystems.
2. Answers will vary. Most will disagree after reading the Ag Today and provide evidence showing food, fuel, and fiber are a part of agriculture and includes multiple careers.
3. Solar energy
4. Apples
5. Iowa
6. Cover bare soil with plant matter or put plants in the soil to hold the soil in place, other answers are also possible
7. 500 gallons of water weigh 2 tons or 4,000 pounds
8. GPS helps steer the tractor, drones help observe crops, etc.
9. Bacon
10. Dairy cattle

Show what you know!

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

1. **How are natural ecosystems and agroecosystems similar and different?**

Natural Ecosystems	Similar	Agroecosystems

2. **Do you agree or disagree with this statement: Agriculture includes only farming.**

    I _____ with this statement because _____

    _____.

3. **Farmers rely on the sun to help their crops grow. Some use the sun to power their lights and heaters in barns. What type of energy does the sun provide?**

    _____

4. **Which of the following is NOT a good source of protein?**

    a. **Tofu**   b. **Apples**   C. **Beef**

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. **Which type of cattle do we get milk from? (circle) Beef cattle or Dairy cattle?**

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

    a. **Bacon**   b. **Hamburger**   c. **Steak**

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, and she was warm under her soft cotton sheets and blanket. When Sam finally got up, the cold wood floor touched her feet. She quickly ran across the room and grabbed socks, underwear, jeans, and a sweatshirt out of the old wooden dresser.

Next, Sam headed to the bathroom to shower. Grandma opened the bathroom door to remind Sam to wash well. Sam didn't always remember to use soap and shampoo. Quickly finishing her shower, Sam grabbed a fluffy warm towel and dried off. Got dressed, brushed her teeth with her favorite toothpaste, and headed to the kitchen.

Sam usually ate cereal or yogurt for breakfast, but today Grandma was making pancakes and sausage. Sam's favorite! Eating every bite, Sam washed it down with a glass of orange juice. Knowing she'd be hungry later Sam took a banana and granola bar to eat on the way to school.

Sam sat at the table and read a comic on her phone until it was time to leave. In a few minutes, Sam put on a coat, hat, and wool mittens. Grabbed her lunch and backpack, hugged Grandma 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 or draw 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.
Read the Iowa Ag Today Magazine for ideas.