Why Agriculture?

Teaching about agriculture in is an ideal way for students to learn and provides 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 they 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 *Ag Today* series is all about.

About Ag Today

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:

Theme: **Agriculture is Everywhere**
- Overview of Agriculture
- Major agriculture crops and livestock
- Agriculture products
- Agricultural careers

Theme: **Food, Health & Lifestyle**
- Carbohydrates, proteins, fats, minerals, vitamins, and water
- USDA My Plate
- Safe food handling

Theme: **Agriculture and the Environment**
- Natural resource management
- Agriculture in global ecosystems

Alignment with Standards and Lexile

Theme: **Culture, Society, Economy & Geography**
- Agriculture and the development of civilizations
- Geography determines what things will grow
- Religion and customs dictate culture
- Global trade and economics

Theme: **Plants & Animals for Food, Fiber & Energy**
- Domestication of plants and animals
- What plants and animals need to grow
- Biotechnology

Theme: **Science, Technology, Engineering & Math**
- Science and technology to increase food production
- Safe, healthy, abundant food
- Sustainable systems for a growing population

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 on 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: http://ow.ly/Y5iVz
- 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 or other sources research an innovative American (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.

Subject	Code	Standard Lexile Measure = 800L
		Essential Concept or Skill/Standard
Social Studies	ES.CS7	Identify markets in which they have participated as a buyer and as a seller and describe how the interaction of all buyers and sellers influences prices. Also, predict how prices change when there is either a shortage or surplus of the product.
Social Studies	ES.CS8	Predict how changes in factors such as consumers' tastes or producers' technology affect prices
Social Studies	History.2B	The student understands how communities in North America varied long ago
Social Studies	History.3B	The student understands the history of the first European, African, and/or Asian-Pacific settlers who came to his or her state or region.
Social Studies	History.3D	The student understands the interactions among all these groups throughout the history of his or her state.
Social Studies	History.3E	The student understands the ideas that were significant in the development of the state and that helped to forge its unique identity
Social Studies	History.8A	The student understands the development of technological innovations, the major scientists and inventors associated with them and their social and economic effects
Social Studies	History.8B	The student understands changes in transportation and their effects.
Science (NGSS)	4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind or vegetation

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), **USDA, conservation, insurance** (pg. 2), **Three Sisters, hybrid, fertilizers, biotechnology** (pg. 3), **supply, demand** (pg. 6), **credit, loans, lenders, interest, inputs, cooperative** (pg. 7), **George Washington Carver, Eli Whitney, Temple Grandin, Norman Borlaug, balk** (pg. 8).

Discussion Prompters

Cover (Agriculture in Society)

1. Can you name a couple different types of agriculture businesses? *(Implement dealers like John Deere, seed and fertilizer suppliers like cooperatives, precision agriculture, meat processors like Smithfield-Farmland, 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 is the USDA? *(A part of the United States government called the United States Department of Agriculture.)*
2. What does the USDA do? *(Oversees the agriculture industry, maintains food safety, food quality, natural resources, etc.)*
3. How often is the Farm Bill updated? *(every five years)*

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. What invention helped people and goods travel? *(The railroad system)*
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 costal 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 x .1 = $35,000)*

Student Page 8 (Americans Making a difference)

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 Americans who improved agriculture?
   A. *Henry A. Wallace – 33rd Vice President of the U.S., U.S. Secretary of Agriculture, Secretary of Commerce, Founder of Hi-Brid Seed Co. (now Pioneer)*
   B. *George H. Shull – scholar, "Father of Hybrid Corn"*
   C. *Rachel Carson – author of Silent Spring, a book that started environmental discussions in 1962*
   D. *Cyrus McCormick – inventor of the mechanical reaper*
   E. *Hugh Bennett – created the Soil Conservation Service (now NRCS), "Father of Soil Conservation"*
   F. *John Deere – inventor of the steel moldboard plow*
   G. *Earl Butz – U.S. Secretary of Agriculture during the 1970s, reshaped American agricultural policy*
   H. *Aldo Leopold – author of A Sand County Almanac, influenced land ethic, and farmers' roles as a conservationist*

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. United States Department of Agriculture
3. $3.30
4. Conservation, products, nutrition, crop insurance, SNAP program
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 farm or business that is run jointly by its members

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. What does USDA stand for? _____

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 things covered by the Farm Bill. _____   _____

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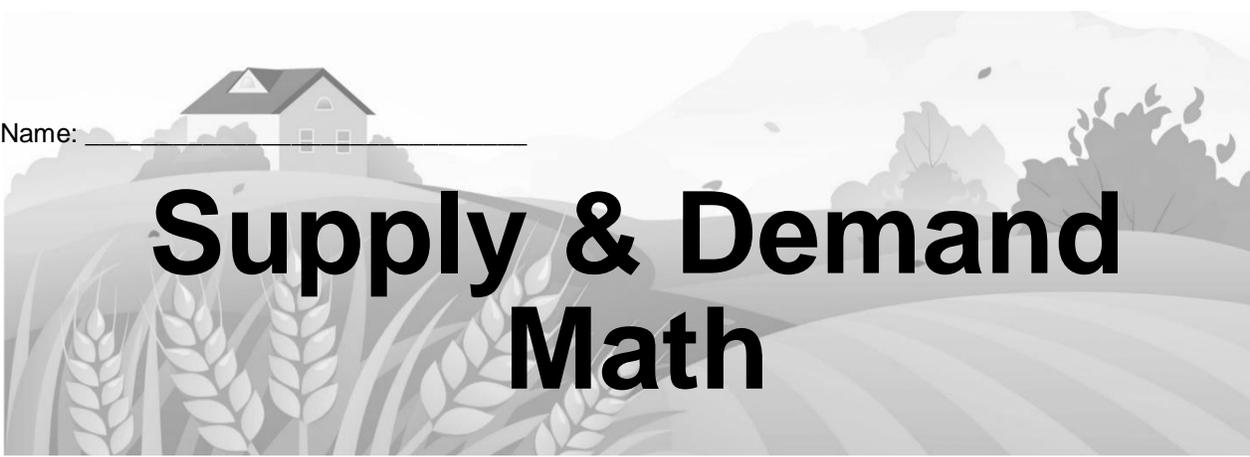
9. Which state would you find cotton fields?
A. Montana   B. Georgia   C. California

10. What is a cooperative?

Name: _____

Supply & Demand Math

In 2015, many turkeys and chickens 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.