



Important Agriculture Inventions

Middle School Food and Agricultural Literacy Curriculum

Precepts

- O. Flexibility and Adaptability
- O2. Manages change

National Standards

BS.01.01.01.a. Define biotechnology and explore the historical impact it has had on agriculture.

FPP.01.01.01.a. Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry.

PST.05.03.01.a. Identify geospatial technologies, including global positioning, geographical information and remote sensing.

NL-ENG.K-12.12 – Applying Language Skills

NS.5-8.3 – Life Science

NS.5-8.6 – Science in Personal and Social Perspectives

NSS-US.5-12.2 – Era 2: Colonization and Settlement (1585-1763)

NSS-US.5-12.3 – Era 3: Revolution and the New Nation (1754-1820s)

NSS-US.5-12.4 – Era 4: Expansion and Reform (1801-1861)

NSS-US.5-12.5 – Era 5: Civil War and Reconstruction (1850-1877)

NSS-US.5-12.6 – Era 6: The Development of the Industrial United States (1870-1900)

NSS-US.5-12.8 – Era 8: The Great Depression and World War II (1929-1945)

NSS-US.5-12.10 – Era 10: Contemporary United States (1968 to the Present)

NT.K-12.2 – Social, Ethical, and Human Issues

Student Learning Objectives

As a result of this **unit** the students will...

Identify key developments in the progression of agriculture.

As a result of this **lesson** the students will...

List five agriculture inventions and explain their impact on agriculture and society.

Time

Instruction time for this lesson: 45 minutes.

Resources

Growing a Nation The Story of American Agriculture. (2000). Retrieved August 2, 2009, from A History of American Agriculture: Official Web site: <http://www.agclassroom.org/gan/timeline/index.htm> — National FFA Organization. (2009). LifeKnowledge Online. Retrieved July 9, 2009, from — <http://agedlearning.org> — National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success.

Tools, Equipment, and Supplies

Writing Surface
Overhead Projector
Colored Pencils
MS.AST.1.1.AS.A – three copies
MS.AST.1.1.TM.A – one per teacher
MS.AST.1.1.AS.B – one per teacher, cut up the agriculture inventions and their dates before class begins. Place them in a hat for students to pick.
MS.AST.1.1.AS.C – one per student, may choose to make one copy a transparency
MS.AST.1.1.ASSESS.A – one per student
Small prize such as Starburst

Key Terms

The following terms are presented in this lesson and appear in **bold italics**:

Milking Machine

Cotton gin

No-till

Biotech crops

Content Outline

- I. **List five agriculture inventions and their impact on society**
 - A. Cotton gin: 1793
 - B. U.S. Food Canning Industry established: 1819
 - C. John Deere Plow: 1837
 - D. Irrigation began in Utah: 1847
 - E. Mixed chemical fertilizers sold commercially: 1849
 - F. Mason jars used for home canning invented: 1858
 - G. Steam tractor: 1868



Important Agriculture Inventions

- H. Barbed-wire invented: 1874
- I. Milking machine developed: 1878
- J. Gas tractor: 1892
- K. George Washington Carver developed his method of crop rotation: 1896
- L. Cooperative formed for artificial insemination of cattle: 1938
- M. Frozen foods became popular: 1941
- N. First grain elevator: 1942
- O. No-till agriculture is used widely to help stop erosion: 1970
- P. GPS is used in farming: 1994
- Q. First biotech crops of soybeans and cotton available commercially: 1997

Interest Approach

Students will be contestants on the game show "What Came First?" You will need six volunteers as contestants. Write the name of the game show on the board and play game show-themed music as they enter the classroom. If desired, adapt the game to include such game show items such as phone-a-friend, ask the audience, or a 50/50 chance.

Another fun twist includes using three copies of **MS.AST.1.1AS.A** and allowing the students to choose which door they want if they meet a certain goal. Tape the three activity sheets on the front writing surface. Under the doors write various "prizes" such as a vacation to Barbados, a new mini van, a donkey, a snuggie, etc. for the student to "win." Since it is just funny and they can't really win these things, provide them with Starburst or something to celebrate their success.

Welcome to class today! You didn't know it, but today we are all contestants on the game show "What Came First?" You may have heard of it before. It is a game where we ask agriculture-related questions and you have to simply tell the audience what came first. It is very similar to what came first, the chicken or the egg? Now that's not one of our questions today, but we do need six volunteers who want to play "What Came First?" Who will play?

Have the volunteers come to the front of the room. Ask each volunteer one of the six questions. Place **MS.AST.1.1.TM.A** on the overhead to aid your visual learners as you read through the questions.

Let's give our wonderful volunteers here a big round of applause. Remember, as a group our goal is to answer four of the six questions correctly to see what is behind door number one, door number two, or door number three. Who knows, we might all win a dream vacation to Barbados! Also, let's not forget about the three tools that will help us on our way: phone a friend, ask the audience, and of course 50/50. Now to our questions:

Question 1: Which came first, the suction **milking machine** or barbed wire?

1. Barbed wire: 1874
2. Milking machine: 1878

Question 2: In the United States, which came first, the **cotton gin** or irrigation systems?

1. Cotton gin: 1793
2. Irrigation systems: 1847

Question 3: Which came first, the gas tractor or the steam tractor?

1. Steam tractor: 1868
2. Gas tractor: 1892

Question 4: Which came first, crop rotation or **no-till** agriculture?

1. Crop rotation: 1896
2. no-till agriculture: 1970

Question 5: Which came first, the frozen foods or the canning industry?

1. Canning industry: 1819
2. Frozen foods: 1941

Question 6: Which came first, pest resistant soybeans or mixed chemical fertilizers?

1. Mixed fertilizers: 1849
2. Biotech soybeans: 1997

At the end celebrate their successes and transition into how these inventions impact society.

Thanks for playing, everyone! Today we are going to take a look at some of the history behind agriculture by creating a timeline of some of the inventions that have changed our lives.



Important Agriculture Inventions

Summary of Content and Teaching Strategies

Objective 1. List five agriculture inventions and explain their impact on agriculture and society.

Have all the inventions and dates from **MS.AST.1.1.AS.B** cut up. Go around the room and let each student pick one invention from the hat or container. There are a total of 16 inventions. In a smaller class, some students may need to draw twice. Just make sure all inventions are included.

In this container there are several slips of paper with agricultural inventions and their dates listed on them. As I walk around the room, each person will get to draw from the container. When you get your paper, read the invention to yourself and don't share it with others. Again, when we read our inventions, we are quiet. When we read we are what? Quiet, right!

Give each student a copy of **MS.AST.1.1.AS.C**. Tell them that as each person shares his/her date we will complete our timelines together. If you have an overhead projector or some other projecting device, it would be helpful to complete one to model expectations. The teacher will announce the date and then have the student stand up and tell the class what occurred during that time.

Now that we all have our paper, let's fill in our timeline. When you hear the date that you drew, stand up and share with us what occurred on that date. Once we have heard the invention, write that invention on our timeline. If you get lost, I will be filling out a timeline just like yours on the overhead.

Give plenty of time for each student to share their invention to complete their timelines. While going through each invention, ask students questions such as: If this invention never happened, how do you think your life would be different? Which of these inventions do you feel is more important? Eventually, have them select their top five agricultural inventions.

Now that we have completed our timelines and understand why these events affect our lives today, let's go a little bit deeper and determine what we think are the top five inventions that occurred in agriculture. Once you have selected your top inventions, draw a box around them.

Depending on time, you may wish to expand their thinking even more by asking the students to write a sentence or two for each of their top five inventions. They can easily do this on the back of their timelines.

Provide students with these sentence stems to form their thoughts:

This relates to my life because...

This is important because...

I want to find out more about...

I was surprised by...

I am beginning to wonder...

I learned...

One thing you may have noticed is that agriculture has changed a lot over the years. Why do you think that change in general, not just in agriculture, is good or bad? Think of this to yourself. Tell a partner your thoughts.

Allow students to talk to a partner.

What did we hear?

Let's think of some items of recent history when change has occurred. Make a list with your partners of things that have recently changed in your life. These can be that you are now an 8th grader, you just became a big brother, your parents let you stay longer for curfew, or maybe you just moved to a new house. Some of these changes may seem hard at first. How should we deal with change?

Elicit Responses. Focus students to the realization that change requires flexibility and an open mind.

Yes, let's try to deal with changes by being flexible and keeping an open mind.

Review/Summary

Students will use a *Hieroglyphics e-Moment®* to review the information by creating three icons for agriculture inventions. One icon represents each of the past, present, and future of agriculture inventions.

We have talked a lot about agricultural inventions during this class period. Let's review this by drawing three different icons. When you hear, INVENT, take five minutes to draw three icons on the back of your timeline.



Lesson Number: MS.AST.1.1

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Important Agriculture Inventions

The first icon will represent agriculture inventions of the past. The second icon will represent agriculture inventions of present day. Finally, the third icon will represent agriculture inventions of the future. Remember three icons, past, present and future. What questions are there? INVENT!

If time allows, let several students share their icons with the class. You could even have them draw their icons on the writing surface for everyone to see more clearly. This works especially well for students who finish faster.

As we can see based on our icons, agriculture has gone through many changes over the years. It will be exciting just to see what new agricultural inventions there will be in our lifetimes!

Application

Extended classroom activity:

Have students create the front page of a newspaper for the year 2050. Have them relate to an agriculture invention that was just invented. Examples could be a cure for cancer found in a certain plant, wheat that grows in the desert, a breed of cattle that is ready for market in a month, or a water-combine used to harvest ocean crops.

FFA activity:

Complete the above timeline activity but include important FFA dates in the mix as well. They can see how something in their present was also in the past when a lot of these inventions were made.

SAE activity:

Many activities restoring old tractors or machinery could be used here to show the difference from a horse-drawn plow to plowing with a tractor. There also may be an Old Times Days festival in your area. Students could volunteer their help or organize one for their community.

Evaluation

MS.AST.1.1.ASSESS.A.

Answers to Evaluation

1. Barbed wire, milking machine, or artificial insemination
2. Cotton gin, irrigation systems, crop rotation, biotech soybeans/cotton, or no-till
3. U.S. Food Canning Industry established, Mason jars used for home canning invented, or Frozen foods become popular
4. Allowed for more efficiency in separating cotton fibers from their seeds. It was usually done by hand before this invention.
5. Answers will vary.





What Came First?

Question 1: Which came first, the suction milking machine or barbed wire?

1. Barbed wire: _____
2. Milking machine: _____

Question 2: In the United States, which came first, the cotton gin or irrigation systems?

1. Cotton gin: _____
2. Irrigation systems: _____

Question 3: Which came first, the gas tractor or the steam tractor?

1. Steam tractor: _____
2. Gas tractor: _____

Question 4: Which came first, crop rotation or no-till agriculture?

1. Crop rotation: _____
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Question 5: Which came first, frozen foods or the canning industry?

1. Canning industry: _____
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Question 6: Which came first, pest resistant soybeans or mixed chemical fertilizers?

1. Mixed fertilizers: _____
2. Biotech soybeans: _____



Cotton gin: 1793

U.S. Food Canning Industry established: 1819

John Deere Plow: 1837

Irrigation began in Utah: 1847

Mixed chemical fertilizers sold commercially: 1849

Mason jars used for home canning invented: 1858

Steam tractor: 1868

Barbed-wire invented: 1874

Milking machine developed: 1878

Gas tractor: 1892

George Washington Carver developed his method of crop rotation: 1896

Cooperative formed for artificial insemination of cattle: 1938

Frozen foods become popular: 1941

First grain elevator: 1942

No-till agriculture is used widely to help stop erosion: 1970

GPS is used in farming: 1994

First biotech crops of soybeans and cotton available commercially: 1997

Agriculture Science and Technology: History of Agriculture Innovations



Short Answer

Name _____

Directions: Write in the space provided the correct answer to each of the questions.

1. What is one agriculture invention that dealt with animals?

2. What is one agriculture invention that dealt with plants?

3. What is one agriculture invention that involved food processing?

4. Why was the invention of the cotton gin important for agriculture?

5. You can only choose one invention you learned about as the most important agriculture invention. What invention is the most important? Write three sentences to explain your answer.

