OKLAHOMA
Agriculture in the Classroom

4-H Innovate Leadership Summit

Modifying the Plow

Please log in using the chat box with your:

First/Last Name, County

AND

Let me know if this is your first Ag in the Classroom workshop

OKLAHOMA
Agriculture in the Classroom

Ag in the Classroom

Ag in the Classroom is a program that works by incorporating agricultural production and processing facts into ready-to-use core curriculum subjects such as math, language arts, science and social studies for teachers of grades Pre-Kindergarten through 12th grade. The lessons and activities teach students to be more knowledgeable consumers and reinforce the basics of nutrition and healthy foods.

Oklahoma Ag in the Classroom is a program of:

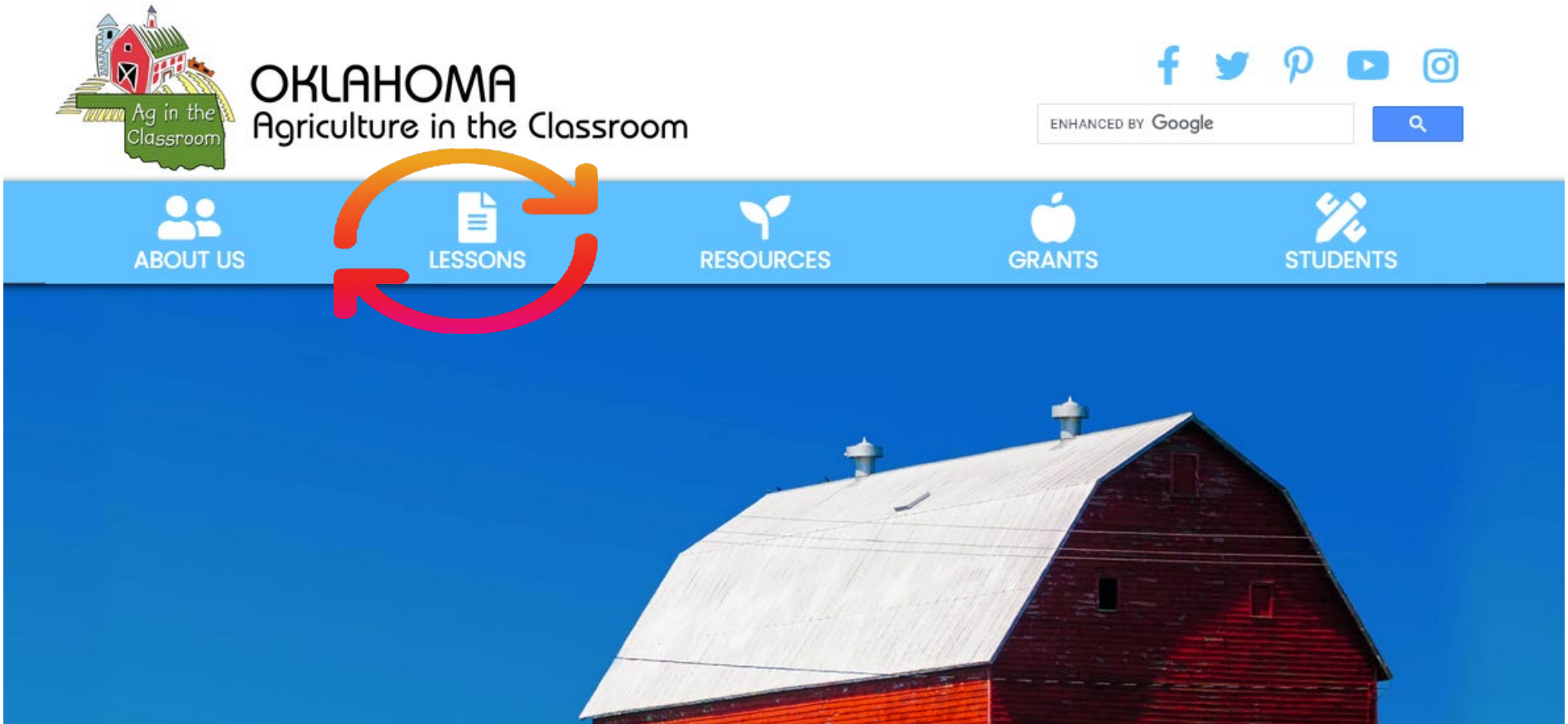
OKLAHOMA Agriculture, Food and Forestry

OKLAHOMA STATE DEPARTMENT OF EDUCATION
CHAMPION EXCELLENCE

OSU EXTENSION
4-H YOUTH DEVELOPMENT

AITC Website

https://agclassroom.org/ok/



[A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [L] [M] [N] [O] [P] [R]

Lessons by Title

View all lessons with all descriptions and links

All Lessons are aligned with Oklahoma Academi

- About Pumpkins
- AC Magruder and the Magruder Plots
- Ag Education and Extension: William Bentley
- Ag in My Classroom
- Ag in My Community
- Ag in the Outfield
- Ag in the Playing

[A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [L] [M] [N] [O] [P] [R] [S] [T] [U] [W] [Y]

Lessons by Title

A

About Pumpkins
Grades 1-3: ELA

Students will read about pumpkins and answer questions to show comprehension.

Pumpkin Lessons and Resources

AC Magruder and the Magruder Plots
Grades 3 and 9: SS, ELA

Students will read about the Oklahoma Red Dirt Groundbreakers who is best known by the OSU Experimental Winter Wheat Plots named in his honor.

Oklahoma Red Dirt Groundbreaker Lessons

Ag Education and Extension: William Bentley and Bermuda John Fields
Grade 3: SS, Math

Students will read about two of Oklahoma's Red Dirt Groundbreakers and discover the impact they had on Oklahoma Extension Offices.

Oklahoma Red Dirt Groundbreaker Lessons

- A Mixed Bag
- Mr. Goldman's Good Idea
- Modifying the Plow
- Mud in the Water
- Mushrooms, A Fungus among Us
- Mushrooms, A Poem

- Next Year's Seeds
- The Nightshades: Tomatoes, Potc

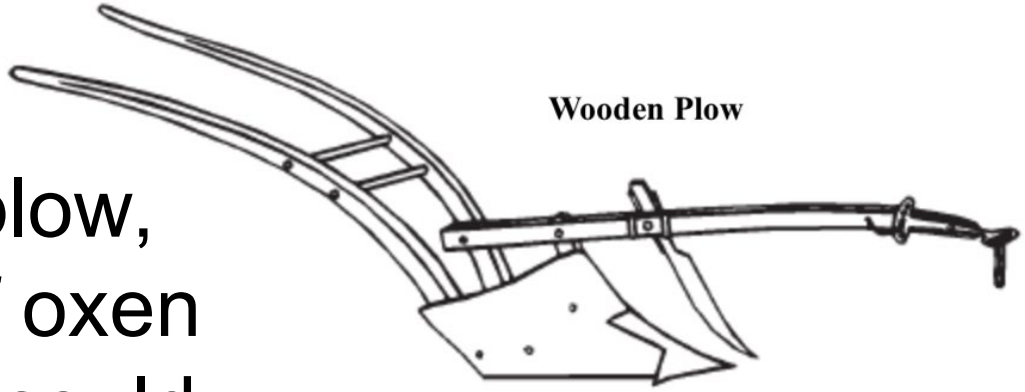
Modifying the Plow

Grades 3-5: Science, Social Studies, English Language Arts, Visual Arts, Math

Students will learn how plows have been modified through the years to improve their use and impact on farming. Students will read about the Dust Bowl and discover how Oklahoman Fred Hoeme's modification of the plow helped reduce wind erosion. Students will design a plow replica using a variety of supplies and then test the effect the plow has on a tray of soil. Students will use the elements and principles of design to analyze artwork that portrays plowing fields. Students will discuss the artists portrayal of plowing a field.

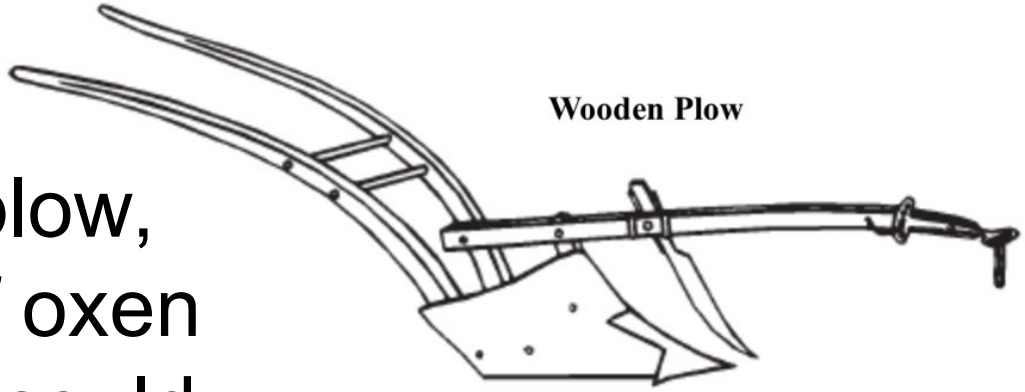
At one point in time, farmers had to plow a field using a hand wheeled plow. To plow one **acre** of land, which is about the size of a football field, the farmer had to spend [redacted] hours working.

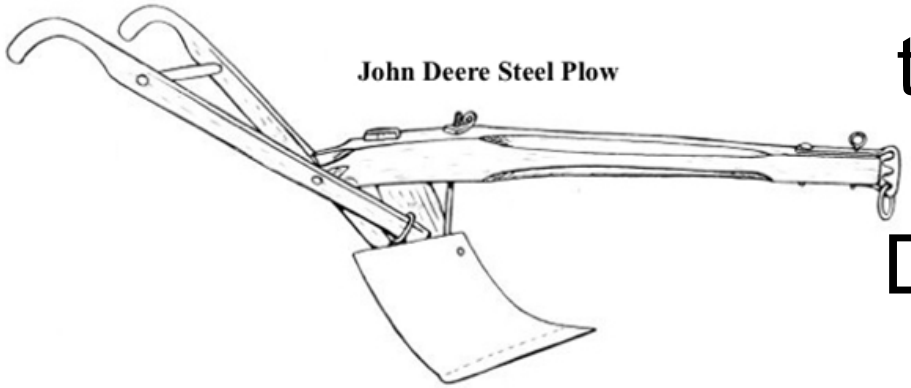
At one point in time, farmers had to plow a field using a hand wheeled plow. To plow one **acre** of land, which is about the size of a football field, the farmer had to spend 96 hours working.



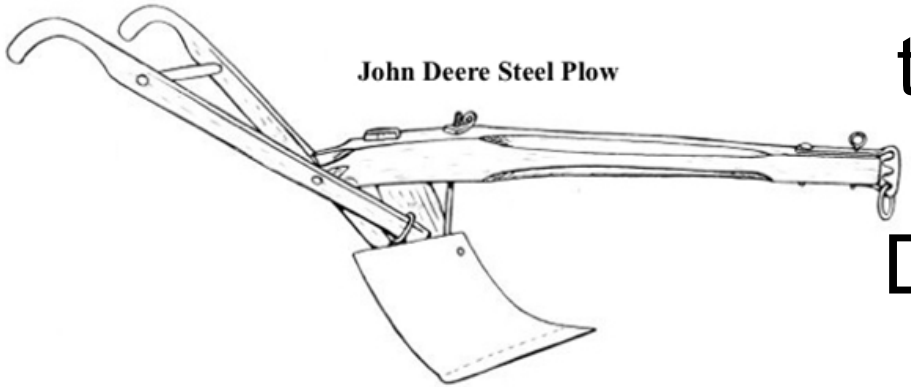
Using a wooden plow, pulled by a team of oxen or horses, farmers could plow an acre of land in only [redacted] hours.

Using a wooden plow, pulled by a team of oxen or horses, farmers could plow an acre of land in only 24 hours.



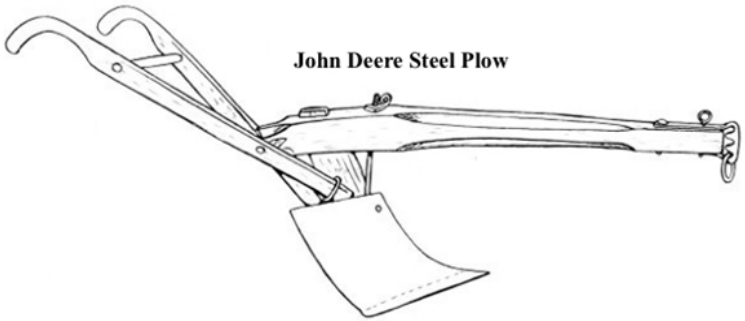


One of the first examples of better technology in farming is the steel plow. John Deere invented the steel plow in 1837. The steel plow allowed farmers to plow an acre of land in [redacted] hours.

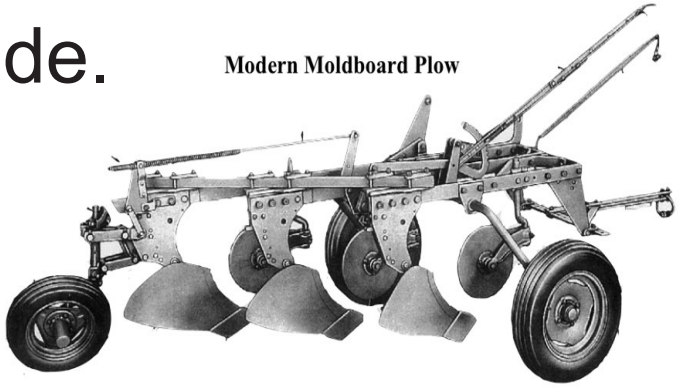


One of the first examples of better technology in farming is the steel plow. John Deere invented the steel plow in 1837. The steel plow allowed farmers to plow an acre of land in only five to eight hours.

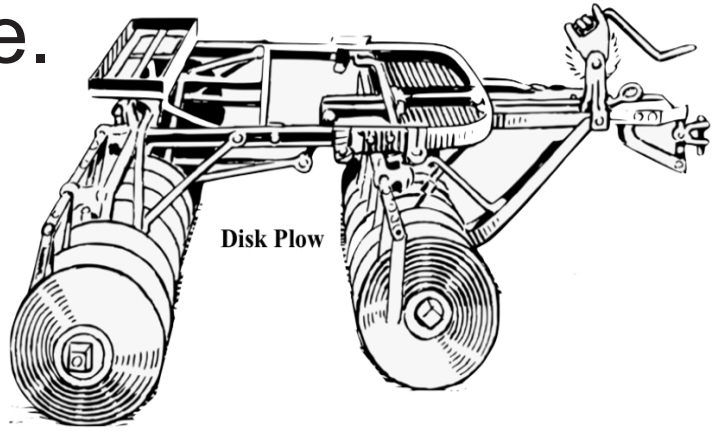
Before the steel plow was invented, the sticky soil would cling to the cast iron blade of the wooden plow and farmers would have to stop to clean the blade every few feet. One day, John Deere, a blacksmith, saw a broken steel saw blade. He noticed the blade was slick and polished from use. He thought that soil might not cling to it. He built a steel plow blade to use on the farm. The blades on the wooden plows were made of cast iron. The blade John Deere invented was made from steel. John Deere was correct, the soil did not stick to the steel blades. This was a huge time saver for farmers! By 1855, John Deere was selling 13,000 steel plows a year.



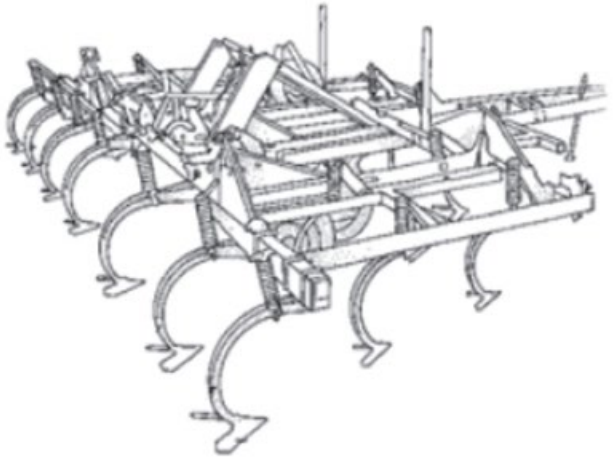
Today, there are three main kinds of plows: the moldboard plow, the disk plow, and the chisel plow. The moldboard plow has a broad blade with a curved upper edge that cuts through the soil. As it is pulled over the ground, it cuts deep down into the soil. It cuts a furrow for planting seeds in the soil while also turning the soil. It leaves a mound of loose soil on the side of the blade.



Disk plows have three or more disks on the same axle, which are sloped backward. The disks are each curved inward and turn in a circle as they are pulled over the ground. Disk plows are used on rough ground, on dry ground, or to plow a field with stubble of plants which were left behind by a combine.



The chisel plow has many curved, pointed shanks made of steel on a straight bar. The chisel plow can cut into the soil only a few inches or up to three feet deep. Chisel plows are often used to till the soil because they only cut through the soil, but do not turn it over. The chisel plow leaves pieces of previous crops, such as roots and stems, in the field. This helps prevent erosion of the soil, by keeping the soil from blowing away. Fred Hoeme, a farmer living near Hooker, Oklahoma, invented the chisel plow in 1933, during the Dust Bowl because he was concerned about wind **erosion**.



Chisel Plow

The effects of the plow on the Dust Bowl

Fred Hoeme from Hooker, Oklahoma

https://www.youtube.com/watch?v=aDSiPV9fr8E

Materials:

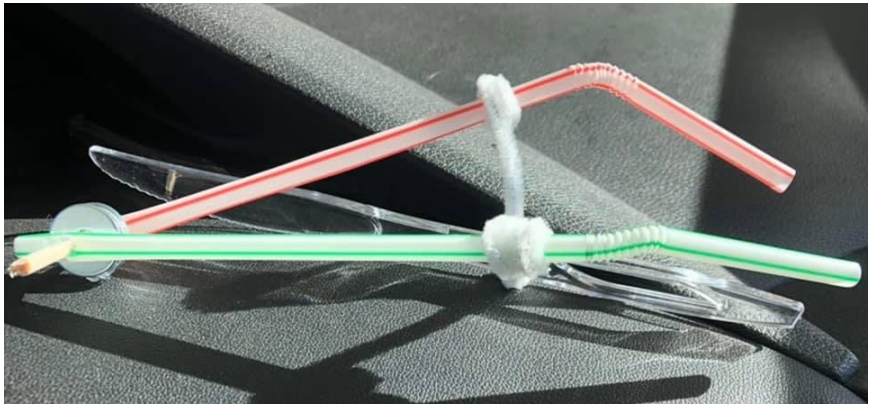
- sticks, shells, rocks, washers, plastic spoons, forks, or knives
- popsicle sticks, pipe cleaners, aluminum foil
- dowel rods, washers
- glue, tape, hot glue guns, measuring tape, ruler

CHALLENGE FOR PLOWS:

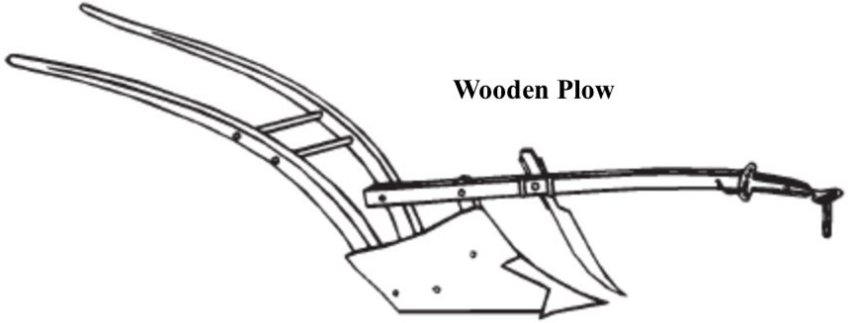
Build a plow that can be pulled through soil and leave furrows behind it.

The plow can leave 1, 2, or 3 furrows behind it.

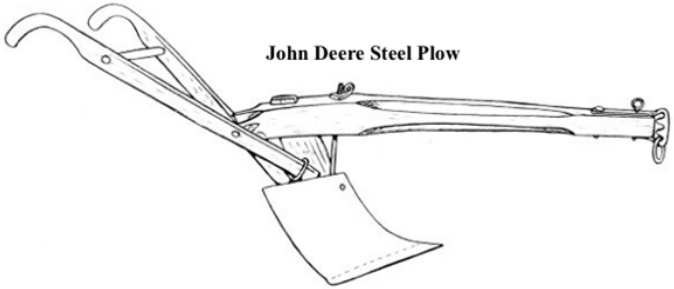
The plow can be based on any of the designs we discussed, or you can create a new design.



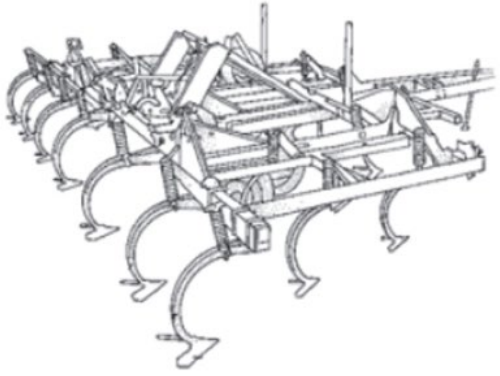
Hand Wheeled Plow



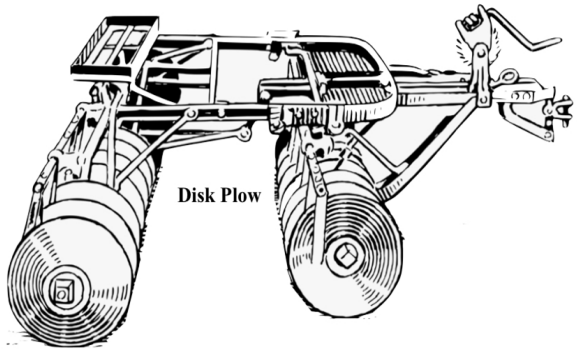
Wooden Plow



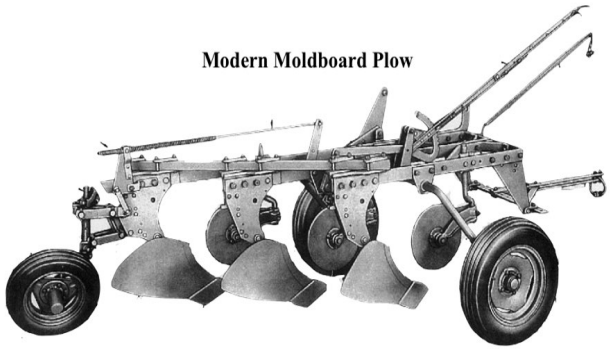
John Deere Steel Plow



Chisel Plow



Disk Plow



Modern Moldboard Plow

OKLAHOMA
Agriculture in the Classroom

AITC is a cooperative program of the Oklahoma Department of Agriculture, Food and Forestry, the Oklahoma State Department of Education and the Oklahoma Cooperative Extension Service.

Melody Aufill
405-795-0121- cell
melody.aufill@ag.ok.gov

Emily Ague
405-885-1851- cell
emily.ague@ag.ok.gov

Audrey Harmon
405-740-0160- cell
audrey.harmon@ag.ok.gov

Susan Murray
580-704-8656 (personal cell – text first)
susan.murray@okstate.edu

www.agclassroom.org/ok