Goldie's HISTORY KITS

Iowa's Corn and Agriculture Industry

STUDENT MATERIALS

STATE HISTORICAL SOCIETY OF IOWA
IOWA DEPARTMENT OF CULTURAL AFFAIRS

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Table of Contents

READ IOWA HISTORY

STUDENT MATERIALS

Iowa's Corn and Agriculture Industry

LESSON PLAN FOR SUPPORTING QUESTION

How has farming in Iowa seen continuity and change?

4TH GRADE

STATE HISTORICAL SOCIETY OF IOWA
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How Does Iowa Corn Impact Iowans?

Iowa leads the United States in corn production. The state set a record in 2016 with 2.7 billion bushels of corn raised. The yield in 2018 set an all-time high with an average of 204 bushels per acre. Iowa's incredibly fertile fields of north central Iowa stretch for miles of corn and soybeans, providing the United States with two of their most valuable exports.

History of Corn and Iowa

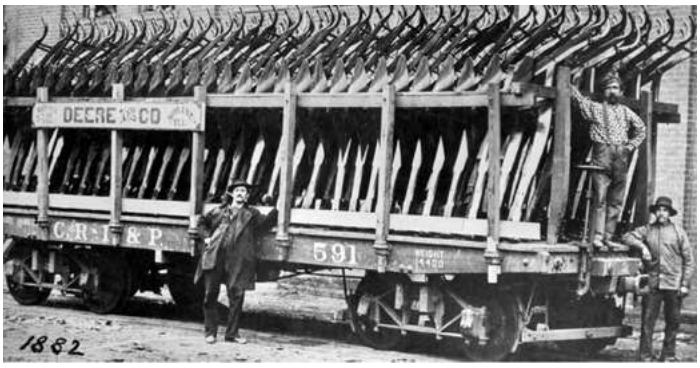
Corn has been at the center of Iowa life for almost a thousand years. The ancestors of our modern corn plants first appeared in Central Mexico as a tiny ear wrapped in a tight husk. Through careful cultivation, mostly by American Indian women, the plant eventually evolved into the size and shape we know it today.

Long, long ago, growing corn had a major impact on the seasonal activities of those who planted it. The year revolved around spring planting and fall harvest, often with the celebration of a successful crop during annual festivals. In Iowa pioneer times, farm boys could often attend school only in the winter because their labor was needed at home for planting, cultivation, and the fall harvest.

Corn is a giant grass plant and, therefore, easily adapted to the fertile plains of the Iowa prairies. It is incredibly productive as one kernel planted will produce one or two ears with 700+ kernels each.

Because corn is bulky, early farmers learned that it was more profitable to feed their corn to livestock, mostly hogs, and then market "the corn" as pork. In the Corn Belt, the corn/hogs market developed in the late 1800s when the railroad lines connected Midwestern farmers with eastern markets.

The labor required kept fields small. The introduction of horse-drawn plows and planters in the mid-1800s allowed one farmer to cultivate much larger fields.



In the mid-1800s, Iowans worked very hard to produce a corn crop in the thick prairie sod. In Illinois, our neighbor to the east, John Deere was working as a blacksmith when he had an amazing idea. More than 175 years later, the company he started is still an industry leader in new agriculture innovations. Courtesy of John Deere

With the tractor in the early 20th century and the mechanical corn picker, field sizes again took a major leap. Even with these advances in technology, farming has remained largely a family-owned and operated business.

At the time of this photo, many farmers used a plow to turn the soil over before they planted the seeds. Turning over the soil with a plow blade broke up the grass roots and made it easier for the corn seeds to sprout. Today, many farmers no longer do this because it can cause the topsoil to wash away. Courtesy of the State Historical Society of Iowa

Kinds of Corn in Iowa

Most of the corn grown in Iowa is "field corn." Only one percent of corn planted in the United States is "sweet corn." Almost all field corn is used for animal feeds, the production of ethanol as a fuel for automobiles, and for manufacturing in products like plastics, cosmetics, and diapers.

If you were to ask Iowans what their favorite season is, many of them would say, "Sweet corn season!" For about five weeks in the mid-summer, many people in Iowa enjoy sweet corn fresh from the field. Even though sweet corn is only about one percent of the corn grown in the United States, it's the corn that most of us are familiar with because we buy it fresh, canned, or frozen from the grocery store.

Farming Practices Change

While farming practices have evolved since early American Indians and pioneer times, one of the things that has not changed is the kind of work that happens.

In the spring, farmers prepare the soil and plant the corn seeds. Long ago, many farmers used a plow to turn the soil over before they planted the seeds in order to break up the grass roots and make it easier for the corn seeds to sprout. In the late 1800s, the mud and clay slid off John Deere's newly invented steel plow, saving the time the farmer the time previously spent stopping and removing the sticky soil. Today, most farmers no longer plow their fields because it can cause the topsoil to wash away in the sun, wind, and rain and large equipment can break the crust on the top soil.

How Does Iowa Corn Impact Iowans?

An early planting technique was to dig a small hole with a hoe and to drop in three to five kernels. Indians often planted beans and squash around the corn to allow the vines to grow up the corn stalks. Today, GPS-guided planters place one seed at a time, in precise rows across the field.

A field of sweet corn near Marengo in Iowa County, Iowa, is shown in this photograph by Carol Highsmith. The photo was taken in 2016. Courtesy of Library of Congress

In the early summer, before corn plants are big enough to shade the ground around them and fill in the rows, the farmer has to remove the weeds so that they don't choke out the corn plants. Long, long ago, this was done by hand with a hoe. In the 1940s, farmers cultivated the fields with a cultivator attached to a tractor. Today, many farmers use a chemical to kill weeds.

In the fall, a farmer harvests the mature corn crop and either sells it or stores it to be used or sold later. Early in Iowa's history, corn was harvested by hand and put in a wagon. In the early 1900s, the first mechanical corn pickers were invented, and that made the farmer's harvest much easier. With today's large combines and other equipment, farmers can harvest 150 acres of corn per day. The way corn is harvested is one of the biggest changes in farming over time.

No matter what time of year it is, field work is very dependent on the weather. Wet and muddy fields do not allow for any work in them. In the same way, periods of drought decrease yields. While farmers can adjust growing practices, they cannot control the weather!

Agriculture has been a major occupation of Iowans, and corn has been the most significant product. Iowa is truly a product of this incredible grain.

Name _____

How Does Iowa Corn Impact Iowans?

Build Context

- **1st reading***: Teacher reads aloud text.*
- **2nd reading***: You, the student, will read aloud and mark the text. During the reading, underline vocabulary words and put a question mark (?) next to parts that need clarification. After reading, circle parts that help answer the lesson supporting question.*
- **3rd reading***: You will re-read as needed in order to find answers these questions that help answer the lesson supporting question.*

1. Authors often signal readers that important ideas are coming up by starting sentences with transition words and introductory phrases. Look for the underlined transition words and introductory phrases in the text. In your own words, list the main ideas that come after them.

2. Write a two or three sentence summary of the "History of Corn and Iowa" section.

_____

_____

_____

3. In the text, highlight the transition words that are at the beginning of a sentence and are used to show how something changed from long ago to today. *Hint: look for words like "long ago," "today" or "in the fall"*

Ask Questions

At the end of this lesson, you will answer the question: Has farming in Iowa shown more continuity or change?

4. What questions will you need to know the answers to in order to answer the lesson supporting question?

Farmer Working a Corn Field with a John Deere Tractor, ca. 1945

This Iowa farmer cultivates his cornfield to get rid of weeds that may choke out the corn plants. The spacing of the plants allows for the farmer to cultivate either direction without damaging the corn plants. *Courtesy of the State Historical Society of Iowa, ca. 1945*

Field Workers Harvesting Sweet Corn in Grimes, Iowa, August 1946

Field workers are harvesting sweet corn for the Beaver Valley Canning Company on Jesse Taylor's farm near Grimes, Iowa, in 1946. *Courtesy of the State Historical Society of Iowa, Des Moines Register & Tribune, August 1946*

Farmer Operating Corn Picker with John Deere Tractor, ca. 1945

A farmer drives a John Deere tractor with a corn picker and wagon attached. This corn picker harvests the ear from the plant but does not shell the kernels from the cob. That is another step in the farmer's production before selling the corn. *Courtesy of the State Historical Society of Iowa, ca. 1945*

Name _____

Analyze a Primary Source (Part 2)

Farmer Working a Corn Field with a John Deere Tractor, ca. 1945

- **This Iowa farmer cultivates his corn field to get rid of weeds that may choke out the corn plants. The spacing of the plants allows for the farmer to cultivate either direction without damaging the corn plants.**

1. What technology is helping this farmer to do his job?

Field Workers Harvesting Sweet Corn in Grimes, Iowa, August 1946

- **Field workers are harvesting sweet corn for the Beaver Valley Canning Company (later called the Grimes Canning Company) on the farm of Jesse Taylor near Grimes, Iowa.**

1. What technology is helping these workers to do their job?

2. How is this similar to and different from how corn is harvested today?

Farmer Operating Corn Picker with John Deere Tractor, ca. 1945

- **A farmer drives a John Deere tractor with a corn picker and wagon both attached to the tractor. This corn picker harvests the ear from the plant but does not shell the kernels from the cob. That is another step in the farmer's production before selling the corn.**

1. How many people does it take to operate this equipment? How does that impact a farmer financially? (Hint: Compare to "Field Workers Harvesting Sweet Corn")

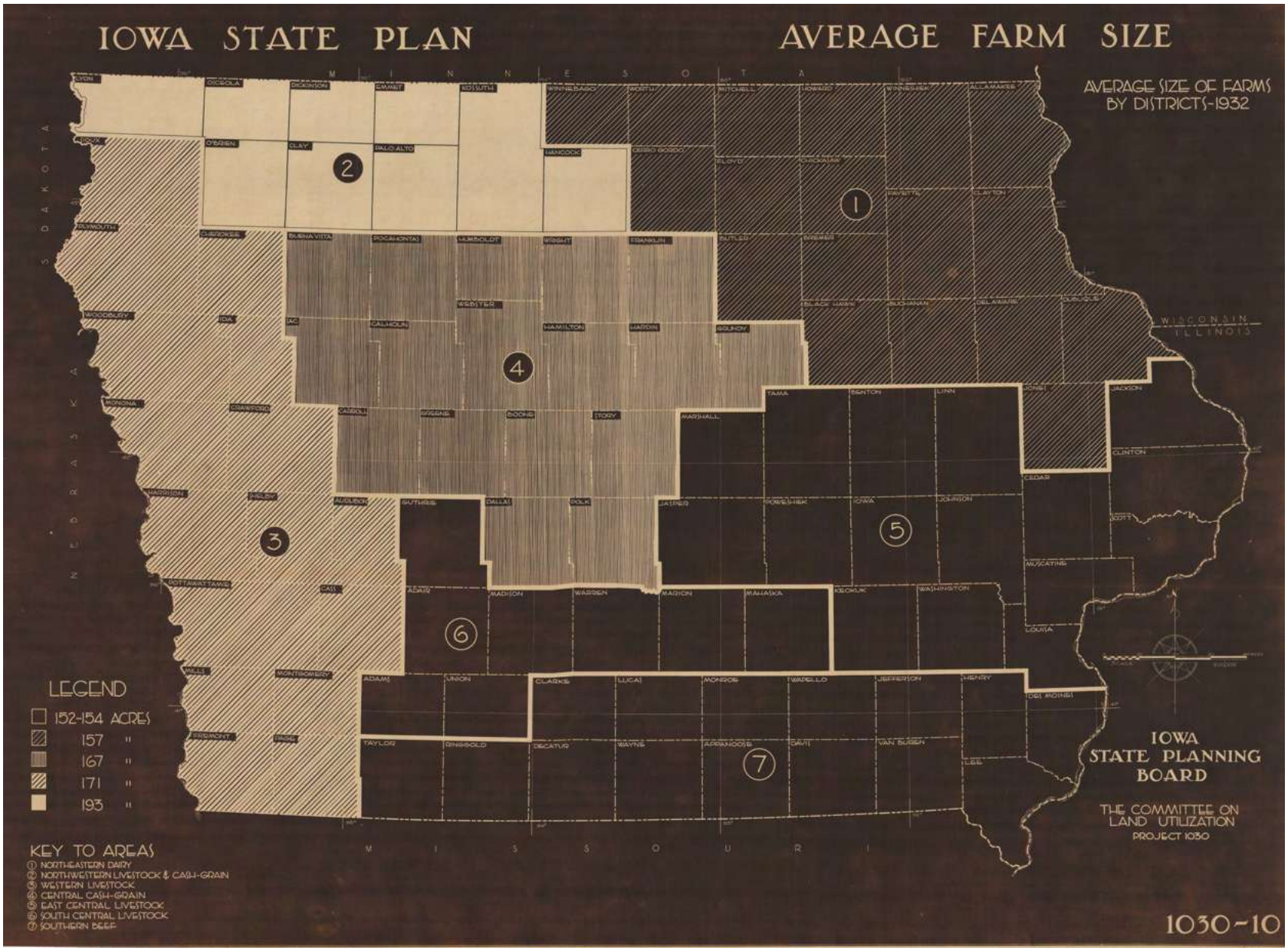
2. How did the inventions that John Deere made impact the farmer in this photograph?

Name _____

Be an Image Detective!

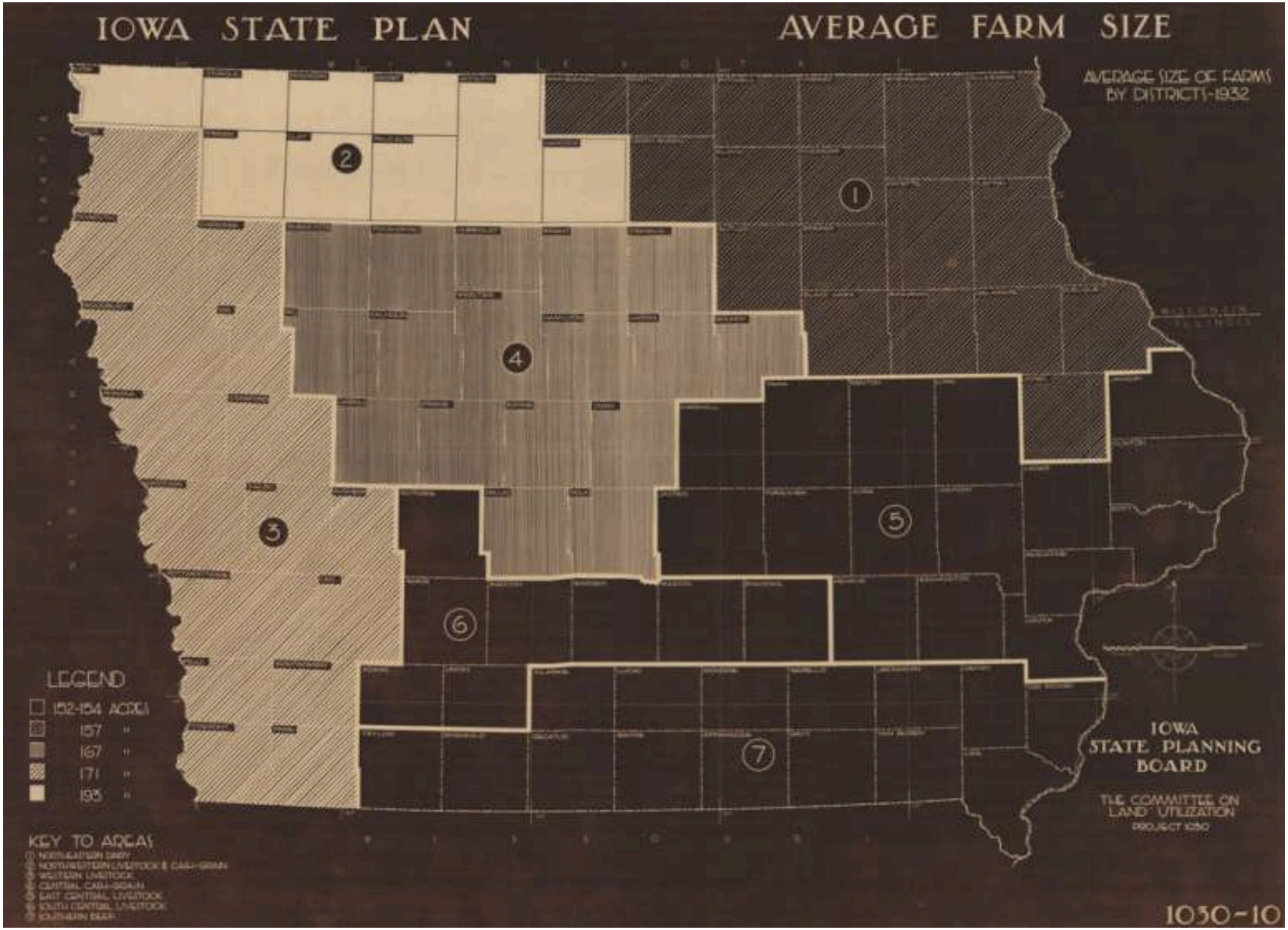
Title: **Who made the image?** **What year?**		**What kind of image is it?** **___ photo ___ drawing/cartoon** **___ painting ___ advertisement** **___ something else**
Start with the Basics In one sentence, what is happening in this image? Is the image ... ____ black & white ____ color What does this tell us about when the image was made? Is there a caption? ____ yes ____ no If so, what does the caption tell you?	**Observe ... Look for the Details** Describe what you see in the image. What are the people doing in the image? What are the objects used for in the image?	**Put the Pieces Together** Where do you think this image takes place? What is its location? What evidence tells you that? What time period? What evidence tells you that? Why do you think this image was made? How does this image compare to modern times?
What questions does this image lead you to ask?		

Average Farm Size in Iowa Map, 1933



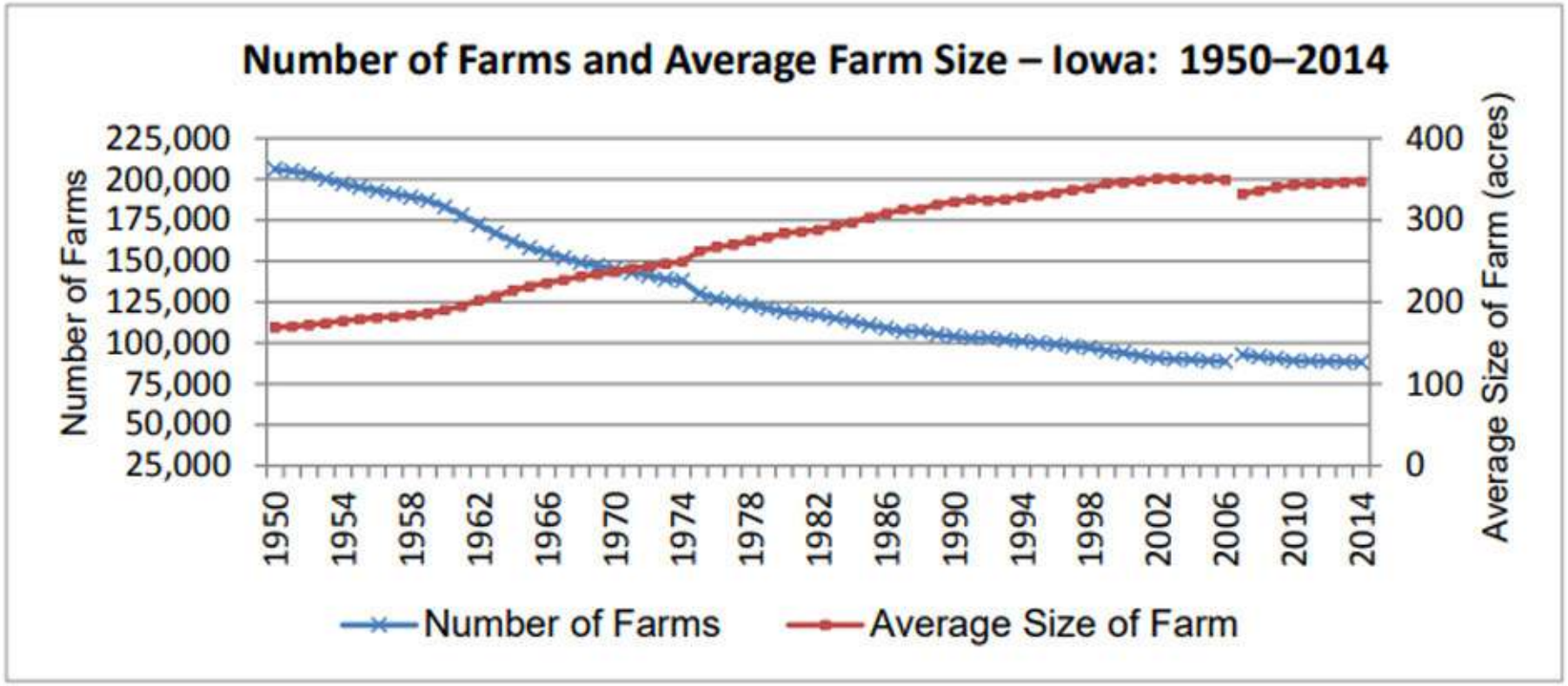
In 1933, the State Planning Board of Iowa, a special committee that only existed from 1934-1939 to study long-term land use plans for the state, published this map showing the average farm size measured in number of acres. *Courtesy of University of Iowa Library and Archives, "Average farm size: average size of farms by district, 1932," Iowa State Planning Board, 1933*

Corn Yield Map of Iowa, 1933



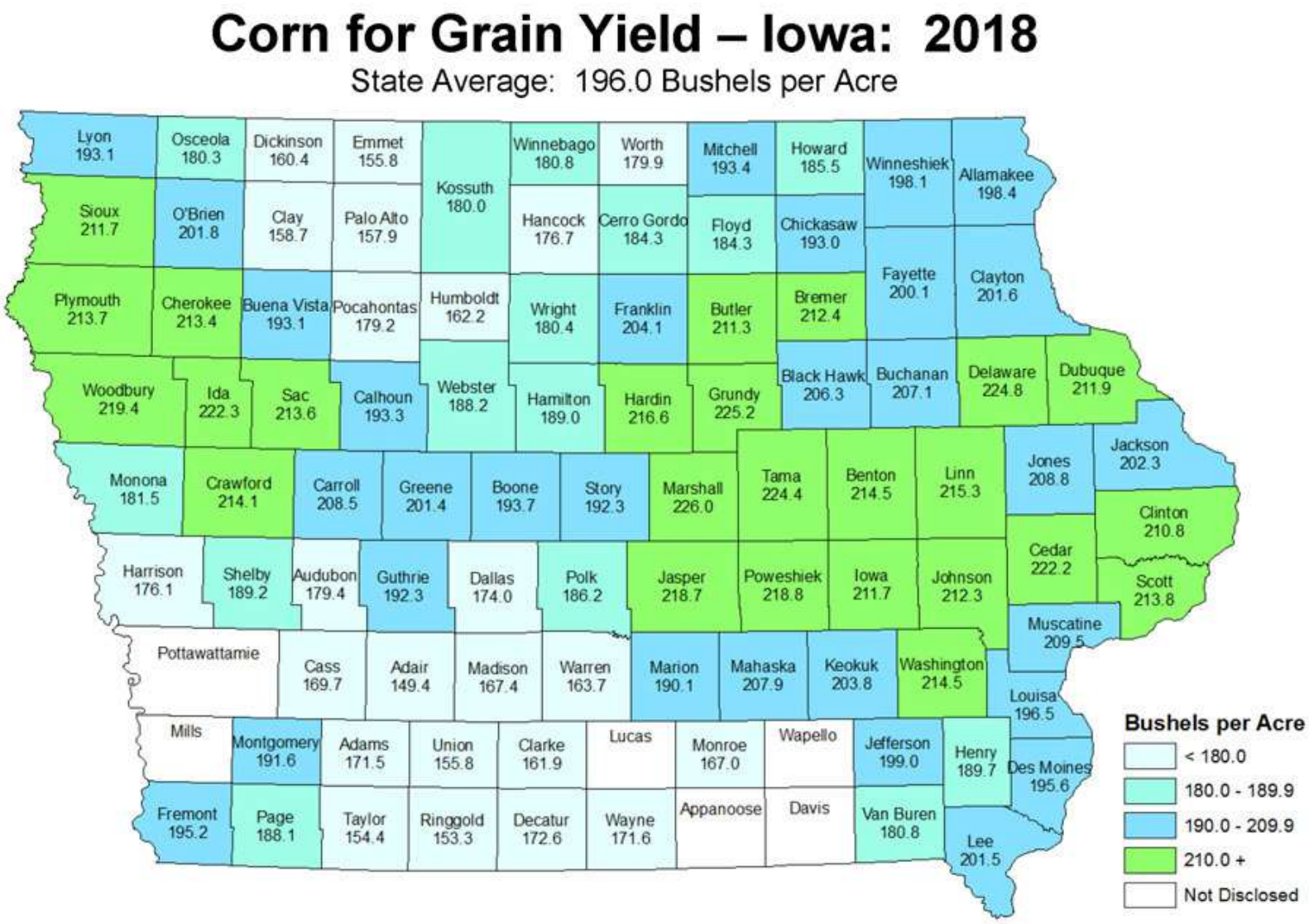
Published by the U.S. Department of Agriculture, this map shows the average bushels of corn produced per acre by county. Keep in mind that many variables impact the corn crop yield, such as weather and soil conditions. *Courtesy of University of Iowa Library and Archives, "Yield of corn: average yield of corn in bushels per acre, by region 1928-1932: state average 37.57," Iowa State Planning Board, 1933*

Number of Farms and Average Farm Size in Iowa from 1950 to 2014, 2015



This graph looks at the number of farms compared to the average farm size in Iowa from 1950 to 2014. *Courtesy of USDA, "Number of Farms and Average Farm Size - Iowa: 1950-2014," pp. 10, Iowa Agricultural Statistics Bulletin, National Agricultural Statistics Service, United States Department of Agriculture (USDA), 2015*

Corn for Grain Yield Map of Iowa, 2018



Each year, the U.S. Department of Agriculture publishes many statistics telling what happened in agriculture that year. One of those statistics is the average corn yield. They add together all of the bushels of corn harvested in that county and then divide by the number of acres of corn planted in the county to calculate an average for the county. *Courtesy of USDA, "Corn for Grain Yield – Iowa: 2018," National Agricultural Statistics Service, United States Department of Agriculture (USDA), 2018*

Name _____

Analyze a Primary Source (Part 3)

Average Farm Size in Iowa Map, 1933

In 1933, the State Planning Board of Iowa, a special committee that only existed from 1934-1939 to study long-term land use plans for the state, published this map showing the average farm size measured in number of acres.

1. Which district has the largest average farm size In Iowa? District Number _____

   Which district has the smallest average farm size In Iowa? District Number _____

2. What's the range of average farm size in Iowa in 1932? _____ to _____ acres per farm
   (Hint: ranges are written with the smallest number first and the largest number second)

Number of Farms and Average Farm Size in Iowa from 1950 to 2014, 2015

This graph looks at the number of farms compared to the average farm size in Iowa from 1950 to 2014.

1. When the same measurement is taken over a period of time and graphed, a trend line forms. Which direction is the trend line going for the number of farms in Iowa from 1950 to 2014?

2. Which direction is the trend line going for the average size of a farm in Iowa from 1950 to 2014?

3. Write one sentence summarizing "Average Farm Size in Iowa Map" and "Number of Farms and Average Farm Size in Iowa." Include the words: number of farms, average size of farms.

Corn Yield Map of Iowa, 1933

Each year the United States Department of Agriculture publishes many statistics telling what happened in agriculture that year. One of those statistics is the average corn yield. They add together all of the bushels of corn harvested in that county and then divide by the number of acres of corn planted in the county to calculate an average for the county. For this publication, they show the average yield for a group of counties, called a region.

1. Which district has the largest average yield in Iowa? District Number _____

   Which district has the smallest average yield in Iowa? District Number _____

2. What was the statewide average corn yield from 1928-1932?

Corn for Grain Yield Map of Iowa, 2018

Published by the United States Department of Agriculture, this map shows the average bushels of corn produced per acre by county. Keep in mind that many variables impact the corn crop yield such as weather and soil conditions.

1. What was the statewide average corn yield from 2018?

2. How does this statewide average corn yield compare with the statewide average yield in 1928-1932?

Challenge Question: 2018 was a drought year for some parts of Iowa. Use evidence from the map to predict which parts of Iowa received less rain and hotter temperatures.

Write one sentence summarizing the “Corn Yield Map of Iowa” and the “Corn for Grain Yield Map of Iowa.” Include the words: yield, increase/decrease.

_____

_____

_____

Name _____

Analyze a Source (Part 4)

***My Family's Corn Farm* by Kate Olthoff**
Iowa Agriculture Literacy Foundation, 2017

1. What is grown or raised on Presley's family's farm?

2. How is corn grown by Presley's family used?

3. How is Presley's family involved in the farm?

4. In Presley's grandparents and great-grandparents time, what was used to plant and harvest corn?

5. What does Presley's family use to plant and harvest corn? How are they helpful?

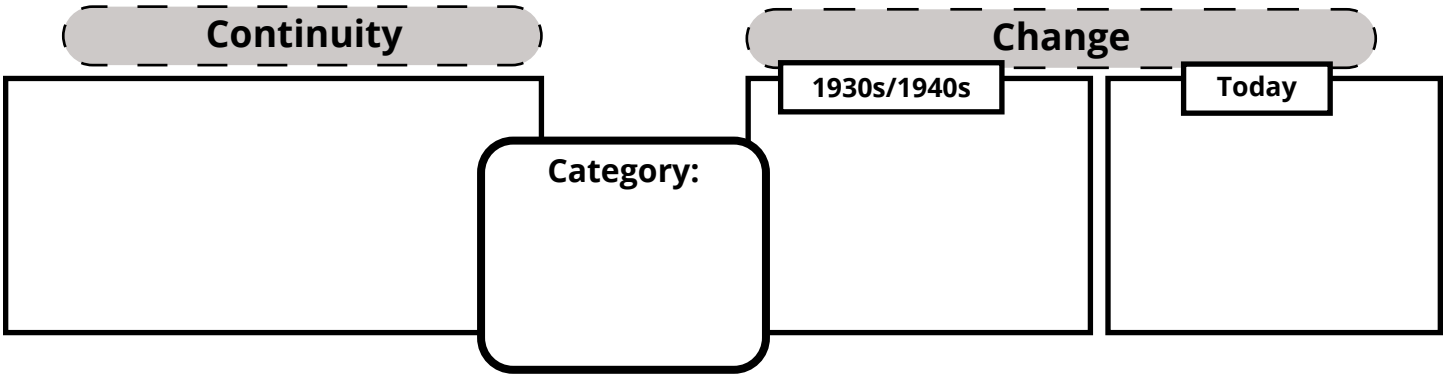
6. Complete the following sentences using these words:
ears, water, harvest, nutrients, roots, spring, combine, plant, grow, dried

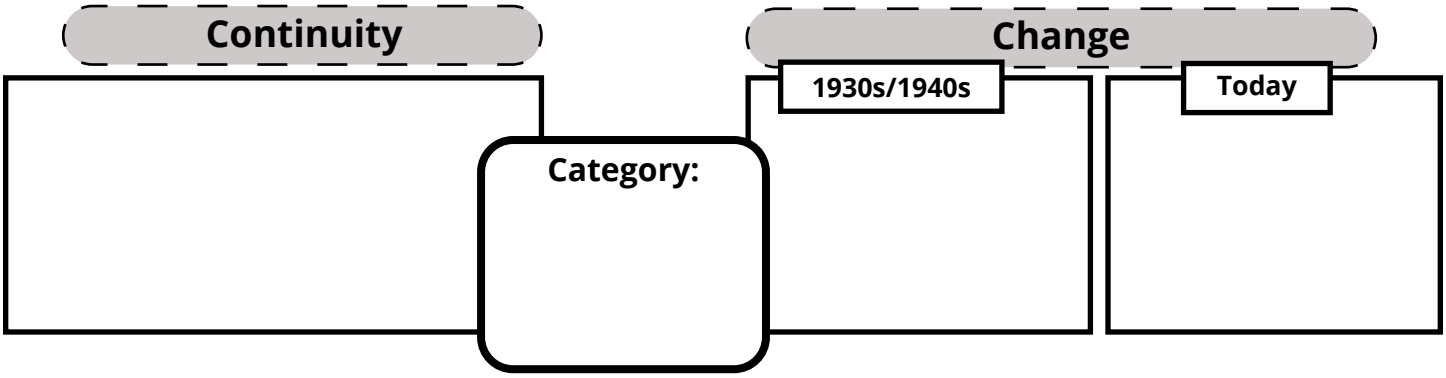
In the _____, farmers _____ seeds in rows. The small corn plants sprout, and the _____ grow down into the soil to gather _____ and _____. In the summer, the corn plants _____ taller and taller, and then they grow the _____ of corn. When the corn plant is fully grown and the kernels are _____ out, it's time to _____ the corn. The farmer uses a _____ to remove the ears from the stocks and take off the kernels.

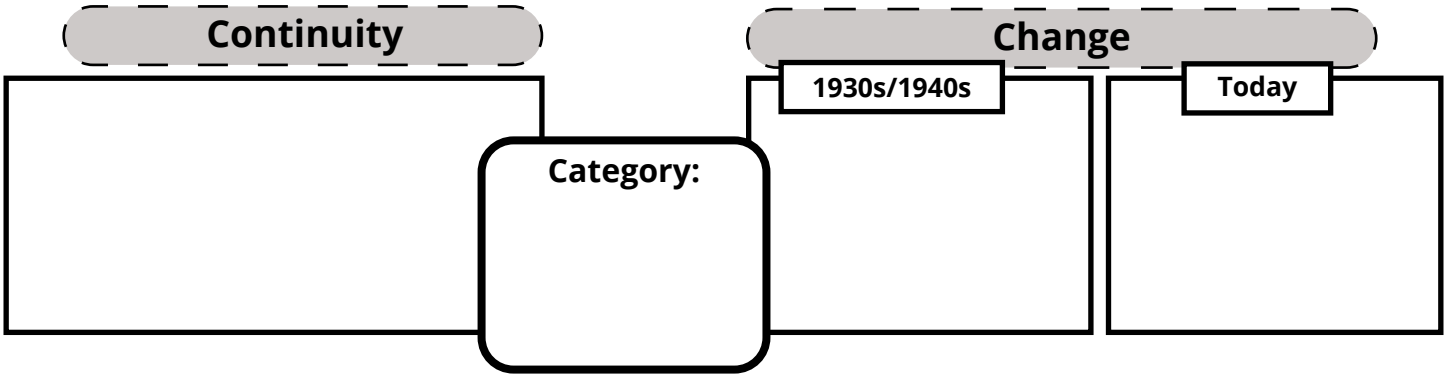
7. How many uses for corn exist today? List a few of them.

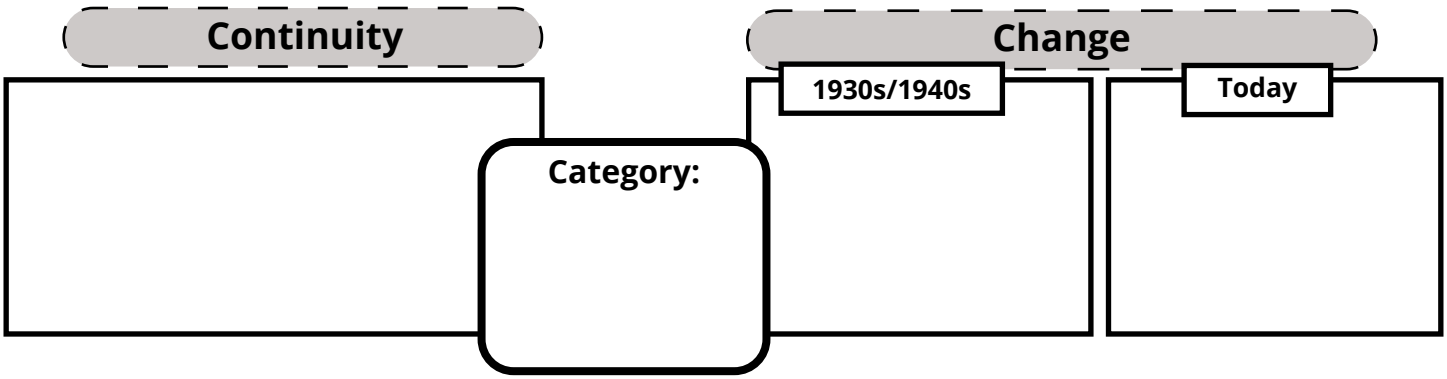
Name _____

Gathering Evidence









Name _____

Lesson Summative Assessment

Scenario: The Iowa State Fair board is sponsoring a new competition this year. They have invited fourth graders to write an essay about farming in Iowa. Twenty-five winners will record their essay and be part of an interactive display in the Agriculture Building next August. Answer the following question for your chance to win. Good luck!

How has farming in Iowa seen continuity and change?

Introduction • Start with a hook sentence. • Write the context in a sentence or two. • Write the big question in your own words in a statement. • Write your thesis (answer) in one sentence. • Refer to your answer to question 2 in Part 1.	

Category 1 _____ • Start with topic sentence (introduces category) • Supporting Evidence • Reasoning (how evidence connects to thesis)	

Category 2

_____

- Start with topic sentence (introduces category)
- Supporting Evidence
- Reasoning (how evidence connects to thesis)

Category 3 *(if needed)*

_____

- Start with topic sentence (introduces category)
- Supporting Evidence
- Reasoning (how evidence connects to thesis)

Conclusion

- Restate thesis in a new way
- Give a clincher - a final, convincing thought to leave with the reader

HISTORY MYSTERY

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4TH GRADE

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Name _____

Analyze an Object

1	**1. What does it look like?** Think about size, shape and color.	**4. Do you see any signs of wear?** Does it mean anything about how the object was used?
	2. What is the object made from? Is it one or more materials combined?	**5. What year or time period do you think it is from?** Why do you think it was from that year?
	3. Is there any writing or details? If yes, what does it tell you about the object?	**6. Who is the owner?** Write a brief description of the owner.
2	**1. What does it look like?** Think about size, shape and color.	**4. Do you see any signs of wear?** Does it mean anything about how the object was used?
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Iowa's Corn and Agriculture Industry

VOCABULARY LIST

Acre

An acre is a common measurement for land. It is equal to 43,560 square feet, which is about the size of an average football field.

Bushel

A bushel is a common measurement for grain. A bushel typically weighs about 70 pounds.

Combine

A combine is a machine used to cut a mature plant, such as corn, and thresh the grain from the chaff, such as corn kernels from the husk.

Corn Belt

The Corn Belt is an area of the United States that includes all of Iowa and Illinois, along with some parts of Indiana, Minnesota, South Dakota, Nebraska, Kansas, Missouri and Ohio. It is called the Corn Belt because it is a region of the Midwest since the 1850s that has dominated corn production in the United States.

Cultivate

To cultivate is to prepare land for the raising of crops, such as tilling or plowing the ground.

Global Positioning System (GPS)

The Global Positioning System is a space-based satellite navigation system that provides location and time information anywhere on the Earth.

Topsoil

Topsoil is a thin layer of surface soil where most plants grow. This is the layer of soil that a farmer turns over while plowing.

Tractor

A tractor is a machine with a very powerful engine used to slowly pull things along, usually farm equipment.

Yield

Yield is the full amount of an agricultural or industrial product that was produced.