# AgMag

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# Agriculture is Everywhere!

**Can you live without agriculture?** When you woke up in your bed this morning, you already had your first meet-up with agriculture. Somewhere in your bedding and pajamas were materials made of fibers from cotton plants.

- Did you wash or shower with soap? That soap is made from fat from cattle and oil from plants such as palm, corn and soybeans.
- Did you have cereal, eggs, milk, bacon, pancakes, buttered toast or juice for breakfast? Thank agriculture again!
- Did you pack a lunch in a paper bag, or finish today's math by writing on paper? That paper comes from another agricultural crop—trees. Corn and soybean **by-products** may be the base for the ink in your books.
- Did you ride to school today? The tires on you bus, car or bike are made from the rubber plant, cords from cotton and **tallow** from cattle. Did you pass a city park, a golf course, an orchard or nursery? Did you see a windbreak or a sod farm? All of these are agriculture, too.

**Can you have an ag-less day?**

There's just no way!

Circle all the things in the photos above that come from Agriculture.

One bale of cotton can produce 215 pairs of blue jeans.

The average potato is 75 to 80 percent water.

AgMag 25 Years Silver Anniversary Issue

# What is Agriculture?

Maybe you said agriculture is farming. You thought of planting and harvesting crops and trees, or raising **livestock** and poultry. Maybe you said it was milking cows or selling fruits and vegetables. It's all this and more.

Agriculture is the **industry** that grows, harvests and brings us food, fiber, trees, turf and landscaping materials.

Name the only industry we need in order to survive.

If you said agriculture, you're right. And if you eat, wear clothes or have a home, you can see how you depend on agriculture yourself!

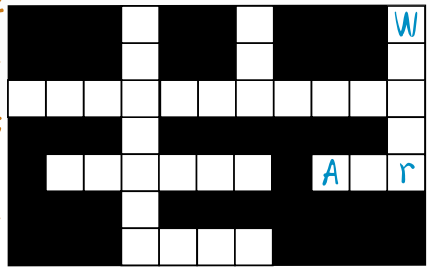
**Food** comes from plants and animals.

- **Fiber** is the raw material from plants and animals that we use to make cloth and clothing, rope and more. Cotton, linen, silk, wool, sisal and hemp are fibers.
- **Trees** give us fiber that becomes lumber, furniture and firewood; pulp for paper; and materials for hundreds of other things. Turpentine and medicines are examples.
- **Turf and landscaping materials** include flowers, ornamental plants and turf (sod) for beauty, pleasure and recreation.

Agriculture brings us almost everything we eat, wear or use each day.

Sun, Soil, Plants, Air, Water, Animals, Environment

**Agriculture depends on workers and businesses. Even more, it depends on Earth's natural and renewable resources. Build the word puzzle and see what these resources are!**




## Agriculture is more than farming!

Agriculture is our nation's largest industry. More than 20 million Americans work in agriculture. They have jobs in:

**Production:** growing and harvesting plants; raising animals.

**Processing:** changing raw materials into many differernt things.

**Distribution:** getting the products to us.

More than **80%** of all jobs in Minnesota agriculture are **OFF the farm.**

**Which part of agriculture does each group of workers below fit into?**

**Label the three groups: production, processing, distribution. Circle a career that interests you. How can you find out more about it?**

### A _____

- Rancher
- Forester
- Seed grower
- Veterinarian
- Dairy farmer
- Farm equipment dealer
- Greenhouse manager
- Gardener
- Animal geneticist
- Soil scientist
- Horticulturist
- Entomologist
- Agronomist
- Climatologist
- Plant breeder

### B _____

- Food safety inspector
- Epidemiologist
- Sawmill worker
- Corn canning factory worker
- Food biosecurity specialist
- Food scientist
- Mechanical engineer
- Fashion designer
- Leather tanner
- Nutritionist
- Carpenter
- Meat cutter
- Microbiologist

### C _____

- Exporter
- Truck driver
- Highway engineer
- Restaurant server
- Florist
- Grocer
- Software specialist
- Barge captain
- Ad writer
- Pizza delivery driver
- Farmers' market vendor
- Food store inspector
- International trade advisor

On each photograph, write the letter of the list it fits into.

*Photos Courtesy University of Minnesota Agricultural Experiment Station*

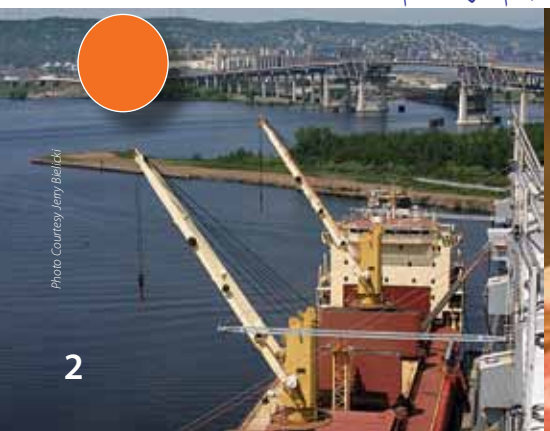


Photo Courtesy Jerry Bielicki

# *Celebrating* Minnesota Agriculture!

Agriculture is Minnesota's second leading industry behind only manufacturing. Agriculture represents over 342,000 jobs (10% of Minnesota jobs) and billions of dollars in our state. Whether you live in the city or country, it's a sure bet many of your friends or neighbors and maybe even you rely on agriculture for jobs.

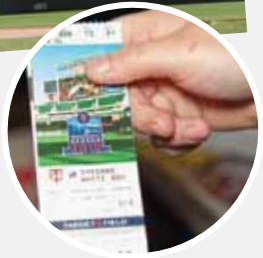
What food, fiber, turf/landscape or forest businesses are in your community? Do you know anyone who works for an ag business or on a farm?

**Match each company/organization to the raw (direct from the farm or soil) and processed products.**

A **logo** is a sign or symbol that stands for a company. Circle the ag business logos you might see in your kitchen.

List three or more agribusinesses in your community. What education or special training would you need to work there? Investigate! What careers might you find in the agribusinesses below?

| Company/Organization | Raw Product | Processed Product |
|---|---|---|
| **1.** Gold'n Plump | hogs | packaged chicken |
| **2.** Hormel | trees | sugar |
| **3.** Minn-Dak Sugar | oats | potato chips |
| **4.** John Deere | chicken | cereal and snacks |
| **5.** Boise | steel | pepperoni and ham |
| **6.** Kemps | sugarbeets | farm machinery |
| **7.** Pioneer | corn seed | ice cream |
| **8.** Old Dutch | potatoes | paper |
| **9.** Malt-O-Meal | milk | ethanol |



The new Minnesota Twins stadium, Target Field in Minneapolis, opened last spring. The green area and trees behind Michael Cuddyer is what batters see from home plate. The dark background helps them see the ball. It's called the "batter's eye."

Photos Courtesy Wayne Kryduba

## Ag at Target Field

You don't just get baseball at Target Field. You get plenty of agriculture, too. From Kentucky bluegrass covering the field to hot dogs and wooden baseball bats, ag is everywhere. Unscramble the words for more baseball-and-ag connections.

| Baseball | Ag Connection |
|---|---|
| Uniforms | tonoct |
| Catcher's mitt | elrtaeh |
| Bats | dowo |
| Ice cream | klim |
| French fries | oesoptat |
| Home plate | brurbe |
| Tickets/programs | seter |
| Baseball covers | whidoce |
| Pretzels | twahe |

Each player has his own bats. Bats are usually made from ash trees.

# Minnesota Grown

What makes Minnesota such a terrific state for agriculture? It starts with a great variety of **soil types** and **terrain** that's good for farming. Add the right weather pattern. That means the right amount of **rainfall** at the right time in the right place during our **growing season**. All of this makes our state tops in many crops!

What grows where? Check out the map and clues. You'll discover Minnesota's four main growing areas. In which do YOU live?*

Unscramble the letters to name the Minnesota county that leads the nation in sugarbeet production.

**O K P L**

Circle it on the map.

Stearns County has more top ten commodity production rankings than any other Minnesota county!



**Glossary**

**Livestock and Crops:** *Agricultural animals and the crops farmers raise mainly to feed them.*

**Cash Grains:** *Crops farmers raise to sell for money.*

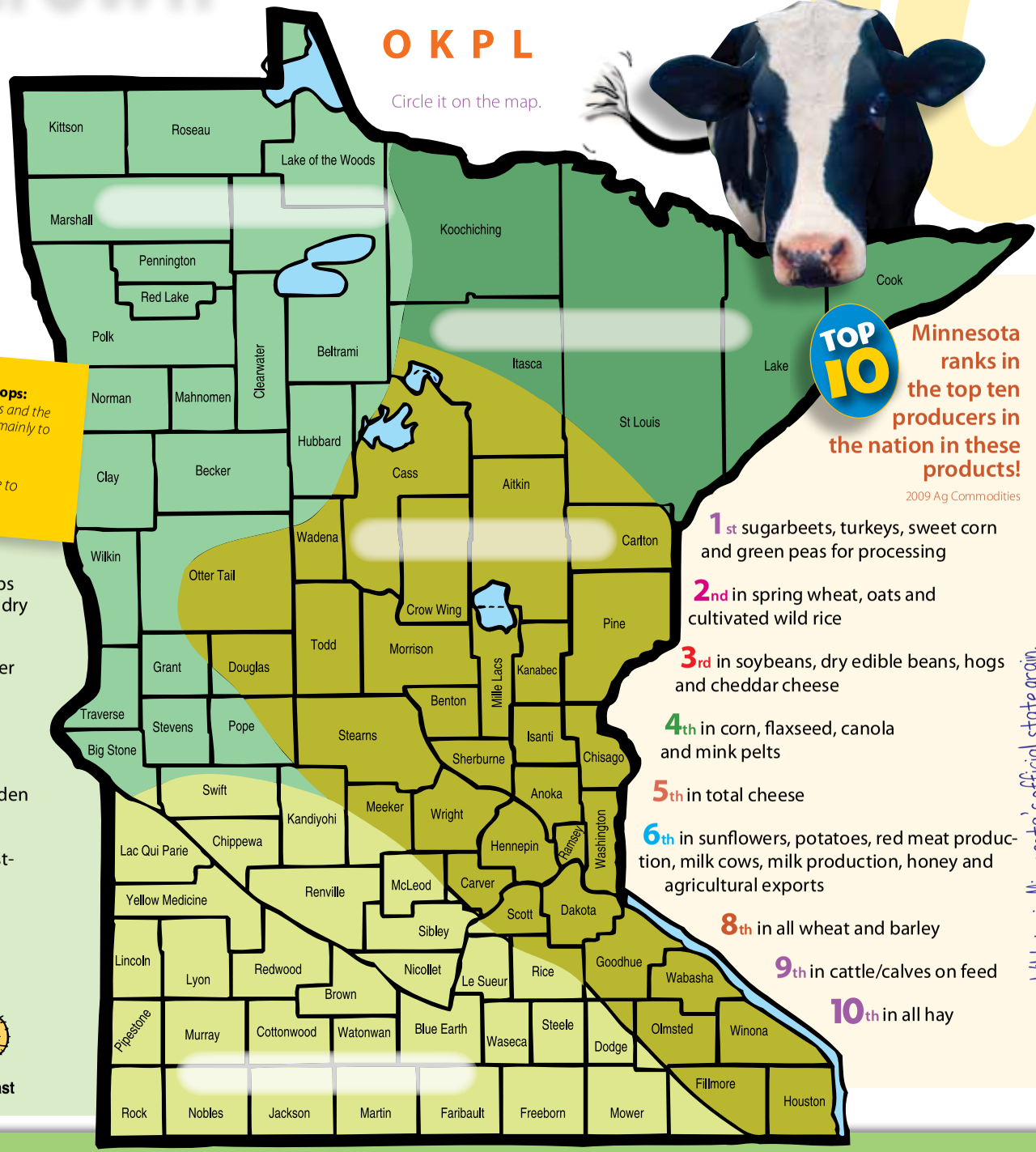
**Match these clues with the names of the growing areas. Write the name of each area in its space on the map.**

## Clues

1. Flat terrain where large machinery can operate. Fertile prairie soils. Less moisture than other areas. Big producer of cash crops such as wheat, oats, barley, soybeans, sunflowers, sugarbeets, dry beans and potatoes.
2. Fertile soils with good moisture. More southern location (longer growing season). Big producer of crops and livestock. Corn, soybeans, cattle and hogs do well here.
3. Hilly terrain with good moisture. Soils vary, including rich, shallow, poorly drained, sandy. Big producer of hay and pasturelands, dairy cattle and turkeys. Other livestock and garden crops, too.
4. Rough, rocky terrain. Shallow, less fertile forest soils. Short frost-free season. High snowfall adds moisture. Big producer of forests, but few field crops.

## Growing Areas

A Northeast  B Southwest  C Northwest  D Central/Southeast




**TOP 10**

**Minnesota ranks in the top ten producers in the nation in these products!**

2009 Ag Commodities

- 1st sugarbeets, turkeys, sweet corn and green peas for processing
- 2nd in spring wheat, oats and cultivated wild rice
- 3rd in soybeans, dry edible beans, hogs and cheddar cheese
- 4th in corn, flaxseed, canola and mink pelts
- 5th in total cheese
- 6th in sunflowers, potatoes, red meat production, milk cows, milk production, honey and agricultural exports
- 8th in all wheat and barley
- 9th in cattle/calves on feed
- 10th in all hay

Wild rice is Minnesota's official state grain.

* You'll find crops and livestock in every part of Minnesota, but this map shows their main growing areas.

# Find it on the Map!

**1.** Find each county with one of its top ag products. Use this code to put colored dots on the map: green for forest products; blue for field crops or cash grains; red for dairy and livestock.

| County | Ag Product | County | Ag Product | County | Ag Product |
|---|---|---|---|---|---|
| Marshall | Wheat | Martin | Hogs | Koochiching | Paper |
| Redwood | Soybeans | Morrison | Beef cows | Aitkin | Bluegass seed |
| Wabasha | Green peas | Otter Tail | Bison | Kandiyohi | Turkeys |
| Clay | Sugarbeets | Anoka | Sod | Lincoln | Sheep |
| Stearns | Dairy | Polk | Dry beans | Todd | Oats |
| Faribault | Corn | Roseau | Canola | Sherburne | Potatoes |
| St. Louis | Wood products | Isanti | Christmas trees | Wright | Honey |
| Fillmore | Hay | Brown | Sweet corn | Kittson | Sunflowers |
| Washington | Apples | Norman | Barley | Goodhue | Alpacas |

**2.** Look at your dots. What do you notice about where things grow in Minnesota? Unscramble the letters to discover five things that make each growing area different from the others. Hint: All the words appear somewhere on pages 4 and 5.

iosl yptes _____

thwaeer _____

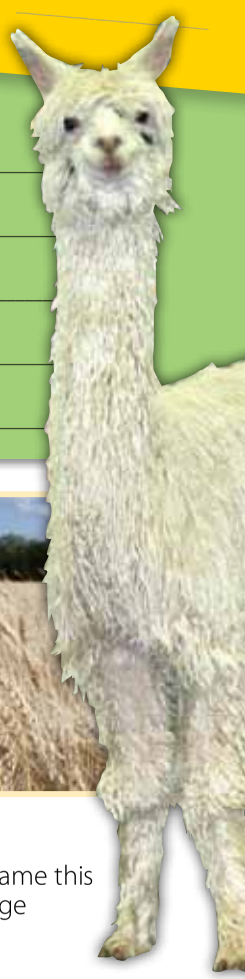
llafinar _____

rraiten _____

gingorw saseno _____

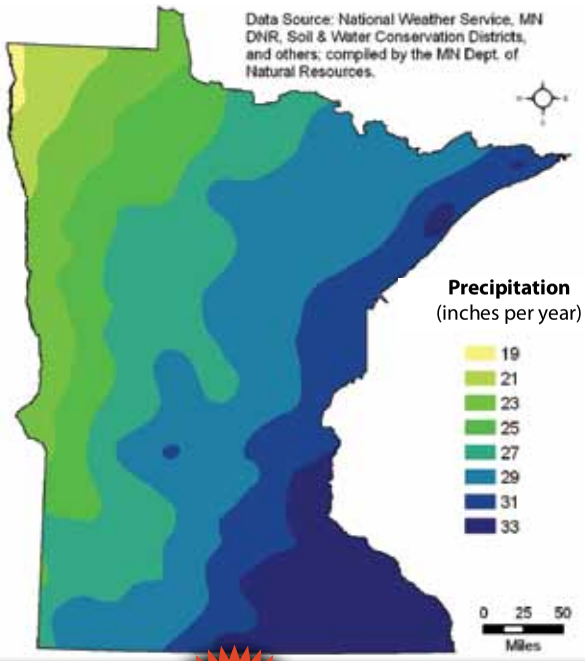
**A growning number of these animals are being raised in Minnesota for fiber. Name the animal.**

_____



# Minnesota Rainfall: What and Where?

**Average Annual Precipitation** (rain and snow)




1. Which growing area of Minnesota normally gets the least rainfall each year? _____

   Which area gets the most? _____

2. Why must farmers understand rainfall patterns when they choose which crops to plant?

3. What happens to farm crops when rainfall is way above normal? Way below normal?

**Your Turn!** Imagine you're a farmer. In which of Minnesota's four regions would it make the most sense to grow these crops? Write your answers. Then read the clues (above) again to check your work.

| Crop | Which Minnesota Growing Area? |
|---|---|
| Hay and Pastureland | |
| Sugarbeets | |
| Corn and Soybeans | |
| Forest and Pine Trees | |
| Wheat | |

One bushel of wheat can yield 60 one-pound loaves of bread.

**Name the crop**

Unscramble the letters to name this grain crop grown where large machinery is used.

e t a h w

Your Answer _____

**Name the growing area**

Your Answer _____

**Twenty-five years ago** **Twenty-five years ago** MN ranked #1 in sugarbeets and sweet corn. How does MN rank in those crops today? Clay County was the nation's sugarbeet leader then. Which county leads in sugarbeets today?

# Was it something they ate?

## Have you, or someone you know, ever felt ill after eating? It could be something you ate.

America has one of the safest food supplies in the world. The U.S. Department of Agriculture and Food and Drug Administration regulate and inspect U.S. industries that handle or process food products. These agencies, along with the Minnesota Departments of Agriculture and Health, help ensure food is safe as it moves from growers to consumers. Yet, each year over 70 million cases of **foodborne illnesses** occur in the U.S. Stopping these illnesses means solving mysteries.

## Food Detectives Working for You

**Epidemiologist** Ben Miller of the Minnesota Department of Agriculture (MDA) Dairy and Food Inspection Division explains what happens when foodborne illness is suspected.

Ben Miller

## What's the Goal?

Tracing the illness culprit back to one source is the goal. For example, in the 2009 peanut butter **recall**, the team discovered that all the illness-causing peanut butter came from one processor. Inspecting the processing plant showed it was unclean. Testing the peanuts revealed Salmonella, a bacterium. All peanut shipments from this company were stopped. Word was sent out everywhere. Any peanuts the company had sold, or products that used these peanuts, were recalled. The mystery was solved and further sickness was prevented. This is just one example that shows how a food safety system helps protect us all.

## You're Part of the Solution

Government rules and inspections make our food safer but they can't do it alone. That's why you're always being reminded to wash your hands and follow other food safety steps. Ask your teacher for the "Tracking Trouble" activity in the Teacher Guide. Then you can show your family what you know about food safety!

## Solving the Mystery

Someone may have nausea, stomach cramps, diarrhea, or fever. They go to the doctor. The doctor orders lab tests to find the cause. If tests show foodborne illness, the doctor reports it to the state health department.

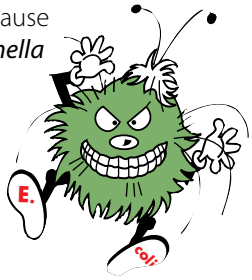
An investigation begins. Are other people in the state sick with the same type of bacteria? If so, the health department digs deeper. They contact the sick people and ask questions, such as: What did you eat in the past five days? Where did you eat it—at home, at a restaurant, at a picnic, at a fair, at school?

Did the sick people all eat the same food? Experts look at all the steps in a food's journey to consumers. How and where was the food grown? How was it cooked, canned, frozen, dried, packaged or touched in any way? Was it kept clean and at proper temperatures at all times?

**Track the Trail!** Underline words above that describe steps in tracking down a foodborne illness.

## Did you know?

- Two common bacteria that cause foodborne illness are *Salmonella* and certain kinds of ***E. coli.***
- The Pasteurization process, invented in 1862, was a huge step in preventing foodborne illness. Use the Web to find out more!




- Food safety is a great career choice if you like science, medicine, health or solving mysteries! What can you learn about Ben Miller's career?

## Minnesota AgBrags

Minnesota is a national leader in tracking down foodborne illnesses. We have good access to health care. Our state health and agriculture departments have great laboratories and investigate outbreaks quickly. Investigators share information nationwide to discover how a foodborne illness began.



True or false? Food can be **contaminated** even if it looks, smells and tastes normal.

# Agriculture's Biggest Leaps (Part I)

American Indians lived in our part of the country long before white settlers arrived and long before statehood. The two major tribes were the Ojibwe (sometimes called Chippewa or Anishinabe) and the Dakota (Sioux). Nature provided everything these early people needed for survival year round. Over time, they became food producers as well as hunters, fishers and gatherers. They planted corn, pumpkins, squash and more. They harvested wild rice growing in northern lakes. They worked hard to get enough food for their own needs. These early farmers did their work by hand in a time before machines were invented.

Agriculture has changed in amazing ways in the years since Indians first farmed the land. What have been the biggest achievements in the past 100 years? Some top agricultural engineers asked themselves that question. They came up with a list that we'll explore in your three AgMags this year.

Notice huge changes in agriculture when hand labor was replaced by machines and technology.

## Electricity

In 1935 the Rural Electrification Administration (REA) brought electricity to farming communities. Imagine how farm life changed!

*Cooking on a wood stove with light from kerosene lamps.*

Electricity helped with farm work. Milking, threshing and other farm jobs were done much faster with fewer people. Now homes and barns were lit with electric lights. Farmers no longer ended their workday when the sun went down. Electric water pumps replaced buckets and barrels. These pumps brought fresh, clean well water into barns and houses.

## Milking Machines

Electricity greatly changed dairy farms. Now electric milking machines came on the scene. Instead of one person milking one cow by hand, the farmer could use electric milking machines to milk more cows at one time. This timesaver meant farmers could add more cows to their herds and produce more milk to sell.

*Farmers carried early milking machines from cow to cow.*

*This robot is the latest in modern milking machines. Milk automatically goes by pipe to a cooling tank. For a neat video about robotic milking go to* ***www.mda.state.mn.us/kids/agmags.aspx***

## Refrigerated Milk Storage

What happens to milk when it's not kept cold? Yes, it quickly spoils. Thanks to electricity, farmers could refrigerate their milk. .

*Photos courtesy Minnesota Historical Society – Friends of Oliver Kelley Farm*

*Farmers poured milk into cooling tanks. This kept it fresh until trucks came to haul it to creameries for processing and packaging.*

Learn about more big achievements in agriculture in your next AgMag!

## Tractors

Tops on the list of ag's 15 biggest achievements in the past 100 years is the gasoline-powered tractor. By 1900 farmers considered tractors and cars their main necessities. Replacing horses with machine power did more to help agriculture move forward than almost anything else. Why? Tractors had more power and more speed. They pulled heavy machines and did more work with fewer people.

*Early tractor.*

*Modern tractor.*

*Tractor photos courtesy U of MN Agricultural Experiment Station*

## What Do You Think?

Why was the arrival of electricity so important to farming?

If you had to live your life without electricity or indoor running water, which would you give up? Why? How would your life change?

What recent inventions have made your life easier? What inventions would you like the future to bring?

**Did you know?**

*In 1800 it took 373 human hours to produce 100 bushels of wheat. By 1987,the year of the first Ag Mag, it took less than three labor hours. What made the difference?*

# AgMag Grab Bag

## CRACK the Code

Why are little stickers on your fresh produce? What do the numbers mean? Those four-or five-digit numbers are codes. They tell the checkout clerk these things about the fruit or vegetable:

1. The type of fruit or vegetable
2. The price
3. If the product is organic or conventionally grown

The codes are Price Look-Up codes, or PLU codes. If there are five numbers and the first number is 9, the produce is **organic**. If there are only four digits and the number begins with 3 or 4, it has been grown **conventionally**.

Which foods are organic?

_____

What is the difference between organic and conventional produce?

*Use the Web to find out.*

A


B


C


D


## Minnesota AgBrags

- The U.S. is the world's largest exporter of farm products. Can you name Minnesota's three biggest ag customers?

(HINT: These are their flags.)

- The Honeycrisp apple was developed at the University of Minnesota. State lawmakers made it our official state fruit in 2006.

There are 2.2 million farms dotting America's landscape. Texas has the most farms (247,500). Minnesota has 81,000 farms.

## Minnesota AG Treasures

### Farmamerica

The Minnesota Agricultural Interpretive Center (Farmamerica) was commissioned in 1978 to preserve the history of Minnesota agriculture. The120-acre site includes old farm settings, a country church, a one-room school, a blacksmith shop and much more. Guests take a walk through settings from 1850 to the present. There's even a tractor exhibit where visitors can "drive" a tractor while watching interactive videos of different farm activities.

ON THE WEB

Visit here: **www.farmamerica.org**

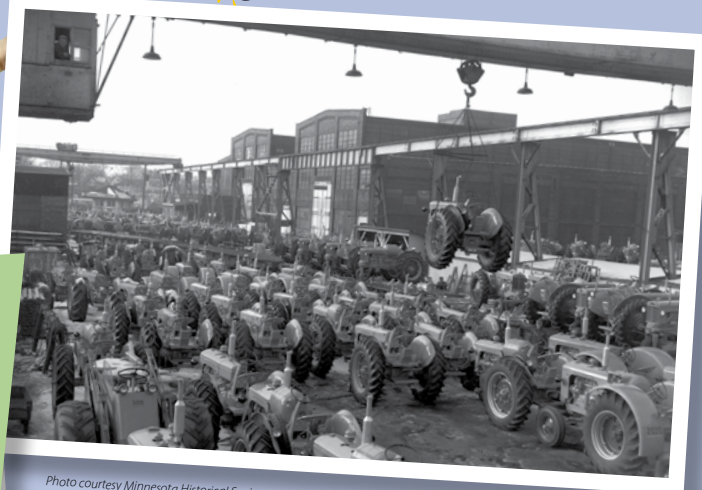


Photo courtesy Minnesota Historical Society – Friends of Oliver Kelley Farm

**Minneapolis-Moline** was a large tractor and machinery producer based in Minnesota. It had large plants in Minneapolis, Hopkins and Moline, IL. Many Minneapolis-Moline tractors, made from 1929 to 1974, still work on farms today!

## Country Corn

Q. What games do little calves like to play?

A. Moo-nopoly and Mar-bulls


**Joy:** Did you hear about the city slicker who found milk cartons in the grass?

**Roy:** No. What happened?

**Joy:** He thought he found a cow's nest!

## Twenty-five years ago

*Minnesota ranked sixth in number of farms in the U.S. We had 93,000 farms. Today we rank 7th and have 81,000 farms. What might explain this?*



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