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AgMag

The Magazine of Minnesota Agriculture in the Classroom

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 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 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** help hold the ink on the paper.
- How did you get to school? Did you walk in shoes of leather or canvas? 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!



What is Agriculture?

Maybe you said agriculture is farming. You thought of planting and harvesting crops and forests, 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, forests, turf and landscaping materials.

What is the only industry we need in order to survive?

Name it
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.
- **Forests** give us tree fiber that becomes lumber, furniture and pencils; pulp for paper; and wood for hundreds of other things.
- **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.

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.
- **Processing:** changing raw materials into many different things.
- **Distribution:** getting the products to us.

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
- 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

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

Photos Courtesy University of Minnesota Agricultural Experiment Station



Celebrating Minnesota Agriculture!

Agriculture is Minnesota's second leading industry behind only manufacturing. Agriculture represents over 367,000 jobs (15% 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.

Company/Organization	Raw Product	Processed Product
1. Gold'n Plump	hogs	packaged chicken
2. Hormel	trees	sugar
3. American Crystal Sugar	oats	potato chips
4. John Deere	chicken	cereal and snacks
5. Boise	steel	pepperoni and ham
6. Schwan's	sugarbeets	farm machinery
7. Land O' Lakes	milk	ice cream
8. Old Dutch	potatoes	paper
9. Malt-O-Meal	milk	cheese and butter

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



Land O'Lakes, Inc.

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?

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.)



- In 1800 it took 373 human hours to produce 100 bushels of wheat. In 1987, it took less than 3 labor hours. What made the difference?
- Minnesota was the first state with a plan to get 20% of gasoline and 20% of electricity from renewable resources by 2015.
- The Honeycrisp apple was developed at the University of Minnesota. State lawmakers made it our official state fruit in 2006.



The new Minnesota Twins stadium, Target Field in Minneapolis, will open next spring. Live sod is already in place. Nineteen refrigerated trucks carried huge rolls of sod from Colorado to cover the playing field.

Photo Courtesy: Wayne Kiyulba

Now turn the page to see what grows where in Minnesota!

Find it on the Map!

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



- 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.

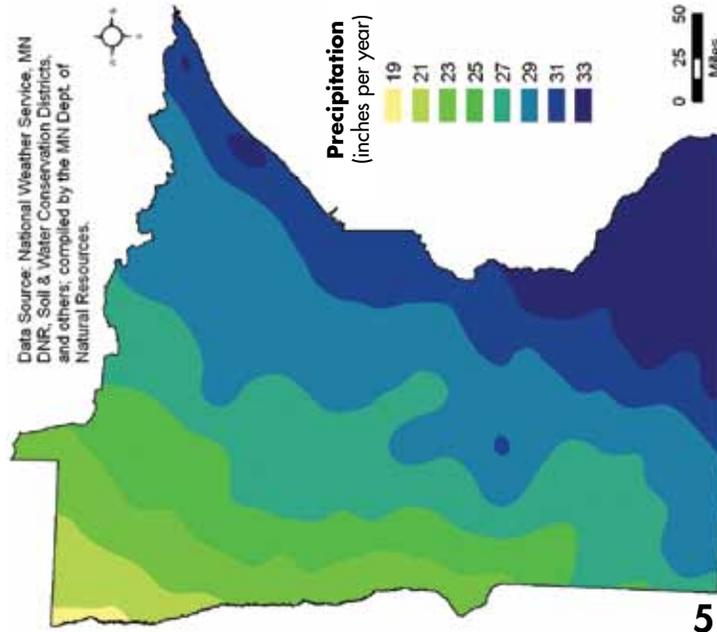
County	Ag Product	County	Ag Product	County	Ag Product
Marshall	Wheat	Martin	Hogs	Koochiching	Paper
Redwood	Soybeans	Morrison	Beef cows	Aitkin	Bluegass seed
Wabasha	Green peas	Otter Tail	Bison	Kandiyohi	Turkeys
Clay	Sugarbeets	Anoka	Sod	Lincoln	Sheep
Stearns	Dairy	Polk	Dry beans	St. Louis	Wood products
Jackson	Corn	Roseau	Canola	Sherburne	Potatoes
St. Louis	Wood products	Renville	Tilapia (fish)	Dakota	Farmer's market
Winona	Hay	Brown	Sweet corn	Kitson	Sunflowers

- 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 _____

Minnesota Rainfall: What and Where?

Average Annual Precipitation (rain and snow)



- Which growing area of Minnesota normally gets the least rainfall each year? _____
Which area gets the most? _____
- Why must farmers understand rainfall patterns when they choose which crops to plant?
- 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 first. Then read the clues again to check your work.

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



Name the crop

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

e l a y b r

Your Answer _____

Name the growing area

Your Answer _____

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?

Photos above courtesy Minnesota Department of Agriculture

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 AgBrag

Minnesota is a national leader in tracking down foodborne illnesses. We have good access to health care. The health and agriculture departments have great laboratories and investigate outbreaks quickly. Investigators share information and work quickly to solve the mystery of how a foodborne illness began.



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

OUR BOUNTIFUL LAND: THE STORY OF FOOD

BEFORE 1825

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).

Thanks to our region's great variety of soil types, terrain, weather and growing seasons, nature provided everything these early people needed for survival year round. The Ojibwe lived and traveled among the northern lakes and forests of what would later become Minnesota. Living in harmony with nature, they caught fish and hunted bear, elk, deer, ducks and geese. They harvested wild blueberries, cranberries, plums and other fruits. They tapped maple trees to make maple syrup and maple sugar as they feasted from nature's bounty. In time, they became food producers as well as hunters and gatherers. In summer Ojibwe women planted corn, pumpkins and squash. They harvested wild rice growing in northern lakes.

The Dakota settled in the south and southwestern plains areas of what is now Minnesota. Dakota villages dotted the banks of many rivers (see map). River water was needed for drinking and crops, and the softer soil along riverbanks made for easier tilling. Dakota men hunted wild game, including bison. Dakota women were farmers, harvesting corn and squash. They ate most of the food as it ripened, but always stored some for winter eating and spring planting.

By the early 1820s, things were changing. Fort Snelling was built on a hill overlooking the meeting point of the Mississippi and Minnesota Rivers. The troops at Ft. Snelling needed a lot of food. Colonel Josiah Snelling ordered that 200 acres of land beside the Minnesota River be tilled for crops. Along with native foods, they



Illustration Courtesy Minnesota Historical Society

planted wheat and oats that had been brought from Europe and the troops ate well. Reports say about 4,500 bushels of potatoes were stored for winter. Not bad for starters!

THE THREE SISTERS



In native lore, corn, beans and squash are often called the "Three Sisters." This name came from the Haudenosaunee, the People of the Longhouse (also known as Iroquois).

Many considered these crops to be special gifts from the creator. They were very important in the agriculture and nutrition of most of the Native people of the Americas. When planted together, the Three Sisters help each other. Corn provides support for beans. Beans absorb nitrogen from the air with the help of bacteria living on their roots. Corn needs a lot of nitrogen to grow. The large squash leaves shade the soil, slow weed growth and discourage animal pests.

Many stories, customs and celebrations have been created about the Three Sisters. Surf the web or check out the library to learn more.

THINK AND DISCUSS:

1. Why did the Indians in northern Minnesota and southern Minnesota eat and grow different foods?
2. How did the lives of people change when they learned to raise their own food instead of having to go out and search for it?



Use a detailed Minnesota map as a guide to:

- Label four rivers where Indians settled.
- Label the location of Fort Snelling (see clues above).
- Label two lakes that were important Ojibwe food sources.

Who's Vegging Out?

Last spring First Lady Michelle Obama broke ground for a kitchen garden on the South Lawn of the White House. Fifth graders from Washington D.C.'s Bancroft Elementary School helped her carve out a 1,100-square-foot space. Mrs. Obama hoped to help educate children about healthy eating.



She grew organic herbs and vegetables for family meals and formal dinners. Did her daughters and the President help pull weeds? She said yes! Did YOUR family grow vegetables this year? Watch for more about gardens in AgMag Issue 3!

What's This?

Answer: This is a trap hung by foresters to monitor emerald ash borer invasions. The borer is an Asian insect discovered in Michigan in 2002. It has spread to 10 states, including Minnesota. It has killed millions of ash trees, both urban and wild. Minnesota has the second-highest number of ash trees in the nation. (Maine is first.) Do you see traps in your neighborhood? Watch the news for updates!



Photo Courtesy Minnesota Department of Agriculture

On the WWW



Fighting foodborne illness is important for all of us.

Get the message for safe eating with these puzzles, games, podcasts and more: www.fsis.usda.gov/Food_Safety_Education/For_Kids_&_Teens/index.asp



Food Detectives Fight Bac®

Bacteria lives on the food you eat if it isn't cooked and handled properly. It also lives on dirty hands. Eeeww! Play this online game and see how to fight this enemy. www.fooddetectives.com

On average a typical American meal includes foods from five different countries. Food may travel 7-14 days before it reaches your table.



How far does food travel before it gets to your plate? During the summer, most people can find eggs, meat and vegetables from farms less than 100 miles away. Unless it's Minnesota grown, our food travels an average of 1,300 miles. Most of the food arrives by truck. For a typical semi-trailer load, that uses about 220 gallons of diesel fuel.

Eating local food cuts down on wasteful packing materials and means less fuel is used to bring food to your plate. It tastes fresher, too! Where can you buy locally grown foods?



Check it out on Minnesota Grown:

www.mda.state.mn.us/food/minnesotagrown

Be a LOCAVORE:

Buy locally grown foods.



MINNESOTA STATE FAIR

What a year! The Minnesota State Fair set an attendance record in 2009 with 1,790,497 people attending. That's 27,521 more people than the previous record set in 2001. **Go figure:** How many people attended in 2001? Nearly one million people visited the popular Miracle of Birth exhibit. During the 12 days of the fair, 125 piglets, 12 dairy calves and 33 lambs were born. How many newborns does that total?

Did You Know?

- ★ Over 190,000 ears of corn were sold at the Corn Roast food booth.
- ★ 22,000 rolls of toilet paper are used at the State Fair each year. Thank a tree!!
- ★ New food items included fry dogs, peach glazed pig cheeks, pot roast sundaes, sunfish, deep-fried Norwegian banana splits and Spam sandwiches.

If you went to a fair this year did you try any new foods? What is your favorite fair food?



Photo Courtesy Minnesota State Fair