

AgMag



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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 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 your 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.

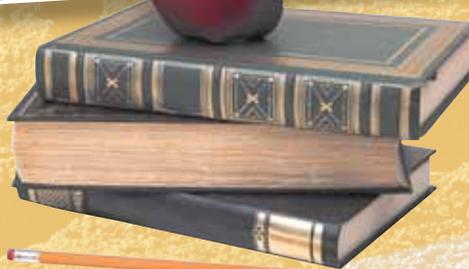


One bale of cotton can produce 215 pairs of blue jeans.

The average potato is 75 to 80 percent water.

CAN YOU HAVE AN AG-LESS DAY?
THERE'S JUST NO WAY!

How does each of these photos show a connection to agriculture?





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.

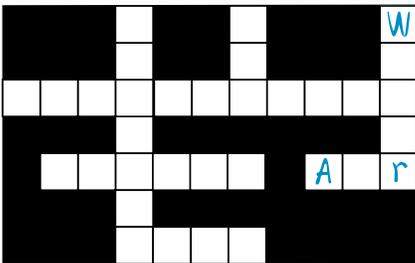
If you said agriculture, you're right. And if you eat, wear clothes or have a home, you can see how you depend on agriculture yourself!

- **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 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?

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

A

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

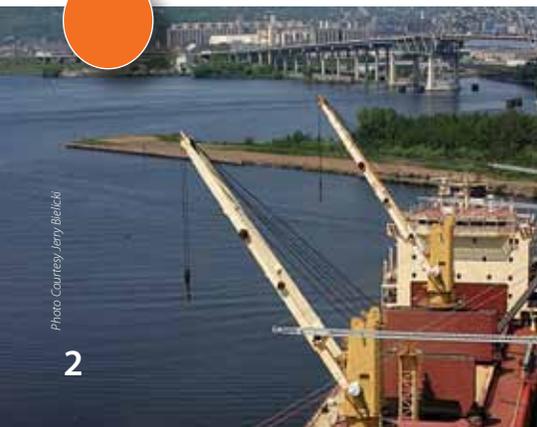
B

- 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
- Ship 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

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.



BOISE



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

Ag at Target Field

The new Minnesota Twins ballpark, Target Field in Minneapolis, offers more than baseball. You get plenty of agriculture, too. From the Kentucky bluegrass sod on 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. 3



Photos Courtesy Wayne Kryduba

My American Farm

www.myamericanfarm.org

Enjoy fun games and activities...
all about agriculture!



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.

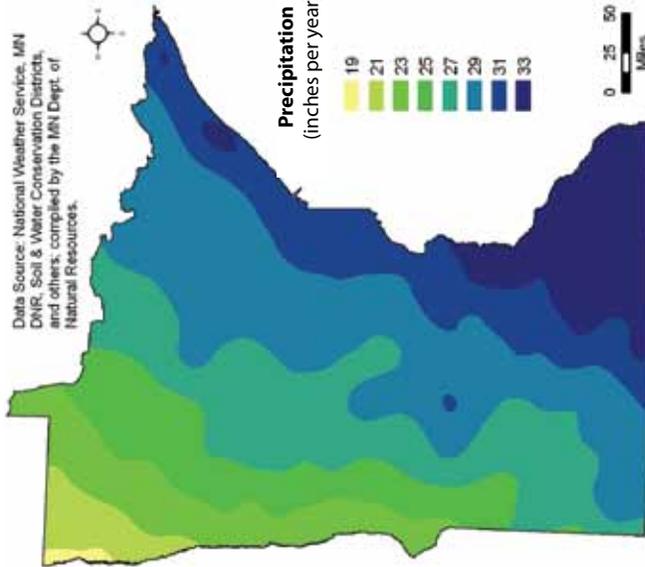
iosl yptes _____
 thwaeer _____
 llafinar _____
 rraiten _____
 gingorw saseno _____

A growing 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)



- 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. 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 _____

Discover the amazing world of soils with images and information from the online Dig It! exhibit at the Smithsonian's National Museum of Natural History.



Dig It! The Secrets of Soil www.forces.si.edu/soils

State Symbols & Agriculture

Are you symbol savvy? A symbol can take the place of words when it's the right picture or design. You quickly understand what the symbol stands for. The logos on page 3 are examples of company symbols.

When we see the state flag or state seal, we think "Minnesota." Symbols can also be something that is not a design or photo but represents special things about Minnesota. Our state legislature has chosen many items from agriculture as official symbols to represent our state.

See some of them below, and test your Minnesota symbol savvy!



State Seal

Adopted: 1861

What items do you see in the state seal? Why do you think the artist chose them? What does "L'Etoile du Nord" mean?

State Drink: Milk

Chosen: 1984

Minnesota cows produce over one billion gallons of milk each year! Name ten milk products you have tasted.



State Muffin: Blueberry

Chosen: 1988

Wild blueberries are native to northeastern Minnesota, growing in bogs, on hillsides and in cut-over forest areas. Some farmers grow blueberries for sale. Blueberries are a super health food, loaded with nutrition. What is your favorite way to eat blueberries? (Examples: malts, muffins, etc.)



State Grain: Wild Rice*

Chosen: 1977

This was a staple food of the Ojibwe for centuries. Minnesota produces over half of the world's hand-harvested wild rice. Where does our wild rice grow? What are two ways it's harvested in Minnesota?



State Fruit: Honeycrisp Apple

Chosen: 2006

Fourth graders from Anderson Elementary in Bayport lobbied the State Legislature to give us this state apple. Where was this juicy, crisp apple developed?



State Mushroom: Morel*

Chosen: 1984

Mushroom hunters prize this edible mushroom. These delicate mushrooms are said to be recently evolved, even though it was 100,000 years ago. Why do you think "sponge mushroom" is the morel mushroom's nickname?



State Tree: Red (Norway) Pine*

Chosen: 1953

The tallest red (Norway) pine in Minnesota stands 120 feet high and is over 300 years old. Where is it located?

More Symbols: Your Turn

State Flower. Thriving in swamps, bogs and damp woods, they grow slowly, taking 4 to 16 years to produce their first flower. They can live for 50 years or longer. It is illegal to pick them.

Name the flower

State Bird. These large black-and-white water birds have long black bills. Their name comes from a Norwegian word that means "wild, sad cry." Clumsy on land, they are excellent divers, underwater swimmers and high-speed flyers.

Name the bird

State Fish. They inhabit waters in all parts of the state, but mainly the large, cool lakes in northern Minnesota. Their eyes are sensitive to light, so they go to deep, dark waters during the day and move to shallow lake areas at night. A favorite fish lover's food, Minnesota's record catch weighed 17 lbs. 8 oz.

Name the fish

True OR False Circle the items you think are official Minnesota symbols:

- State Song (Hail Minnesota) • Band (The Minnesota State Band) • Gemstone (Lake Superior Agate)
 Butterfly (Monarch) • Photo (Grace) • Slogan (The Gopher State)

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!

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.



Cooking on a wood stove with light from kerosene lamps.

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.



Video - Robot Milking

www.AgMagOnline.com



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.



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



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?

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

A. Moo-nopoly and Mar-balls yield to some little calves like to play.



Country Corn

- 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!



Minnesota AgBrag

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

(HINT: These are their flags.)



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



USDA Agricultural Research Service Sci4kids

From "farm to fork" (and even fuel), agricultural research touches our lives in surprising ways. Dig in and discover!

www.ars.usda.gov/is/kids



What's on your plate!

Check out the new food guide. Take action in your personal diet by making changes that work for you.



Start today!