

AgMag



1
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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.



Can you have an ag-less day?
There's just no way!

Take A Closer Look!

What is this
Minnesota crop?

Learn more on page 6.





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.

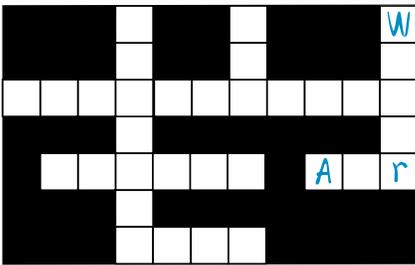
- **Food** comes from plants and animals.
- **Fiber** is the raw material from plants and animals that we use to make cloth and clothing, rope and more. Cotton, linen, silk, wool, sisal and hemp are fibers.
- **Trees** give us fiber that becomes lumber, furniture and firewood; pulp for paper; and materials 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.

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!

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
- Farmer
- Biotechnologist
- Greenhouse manager
- Gardener
- Animal geneticist
- Soil scientist
- Horticulturist
- Entomologist
- Agronomist
- Climatologist
- Plant breeder
- Viticulturist

B

- Food safety inspector
- Epidemiologist
- Sawmill worker
- Biochemist
- Food biosecurity specialist
- Food scientist
- Mechanical engineer
- Fashion designer
- Wood scientist
- Nutritionist
- Carpenter
- Meat scientist
- Microbiologist
- Food processors

C

- Exporter
- Truck driver
- Highway engineer
- Restaurant owner
- Florist
- Grocer
- Software specialist
- Ship captain
- Ad designer/writer
- Pizza delivery driver
- Farmers market vendor
- Food store inspector
- International trade advisor
- Grain merchandiser
- Pilot

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



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

2012: A Hot, Dry Year!

For most of our nation, 2012 has been a year of high temperatures and low rainfall. Over half the country has had moderate to severe drought. It is the largest U.S. area affected by such dryness in nearly 60 years. Agriculture-rich Midwest states such as Illinois, Indiana, Missouri and Iowa were especially hard hit. Minnesota has some drought, too. Our spring rains, rich soil and crop diversity saved us from some of the huge crop and animal losses of other states.

Drought affects all of us. Crops wilt and yields are down. Farmers may not have enough feed or water for their animals. Some fruits and vegetables may not be available at stores or at local farmers markets. When supplies of agriculture products go down, prices go up at grocery stores, restaurants, gas stations and more.

The greatest drought in our country's history was the Dust Bowl Drought of the 1930s. Dry soil, lifted by the



The Dust Bowl covered over 70% of the U.S. and lasted almost ten years. Photo Courtesy Minnesota Board of Water and Soil Resources.

wind into great clouds of dust and sand, were so thick they concealed the sun for days at a time. Farmers could not produce crops and animals. They lost their incomes and thousands of farm families lost their land. Many people went hungry.

Compare these maps. Orange areas show severe drought. What do the maps tell us?

How has the drought affected you?



1934
Dust Bowl



2011



2012

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!

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

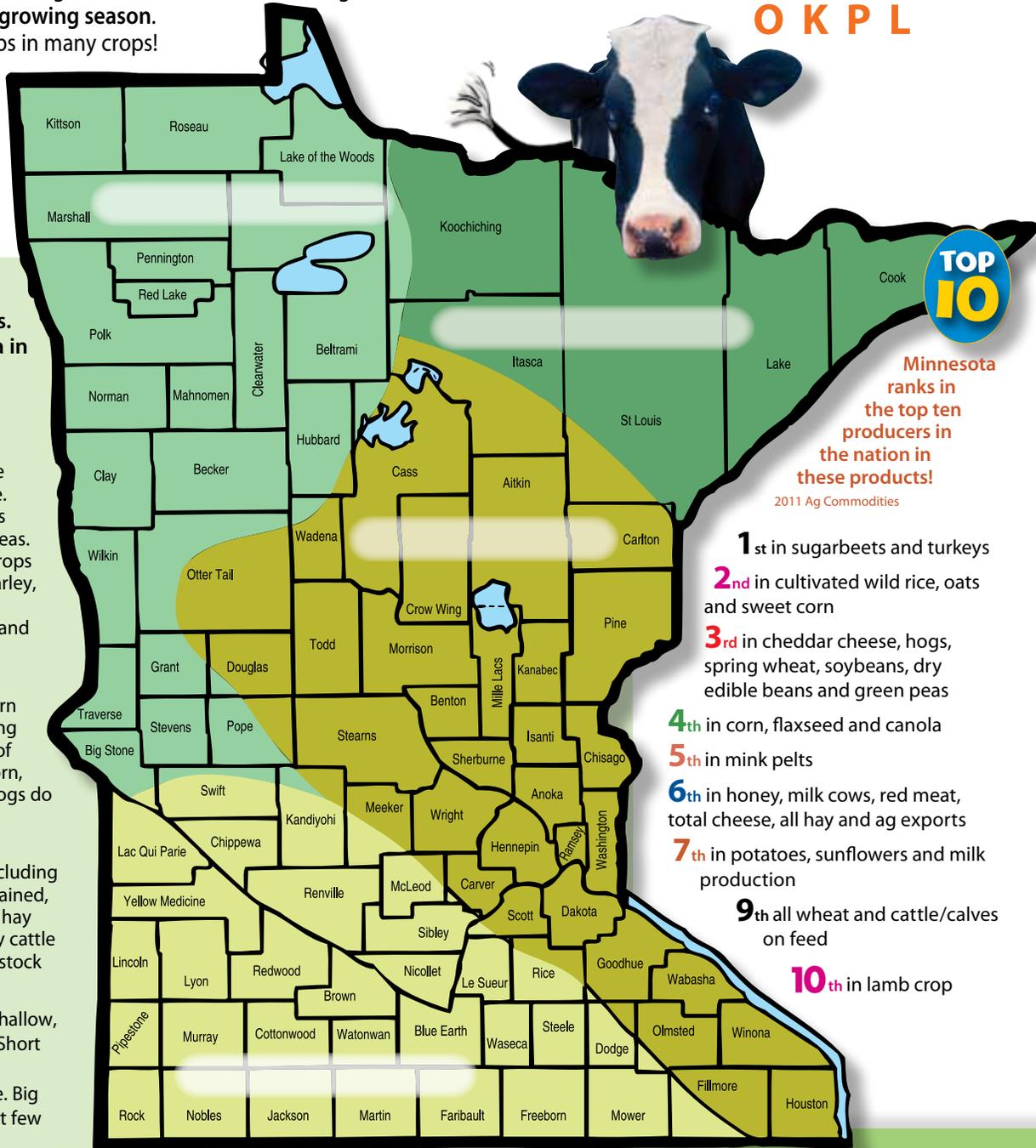
O K P L

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

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.



TOP 10
Minnesota ranks in the top ten producers in the nation in these products!
2011 Ag Commodities

- 1st in sugarbeets and turkeys
- 2nd in cultivated wild rice, oats and sweet corn
- 3rd in cheddar cheese, hogs, spring wheat, soybeans, dry edible beans and green peas
- 4th in corn, flaxseed and canola
- 5th in mink pelts
- 6th in honey, milk cows, red meat, total cheese, all hay and ag exports
- 7th in potatoes, sunflowers and milk production
- 9th all wheat and cattle/calves on feed
- 10th in lamb crop

Growing Areas



A Northeast



B Southwest



C Northwest



D Central/Southeast

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

Glossary

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

Cash Grains: Crops farmers raise to sell for money.

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

Find it on the Map!



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

- 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
Jackson	Soybeans	Morrison	Beef cattle	Aitkin	Bluegrass seed
Wabasha	Green peas	Otter Tail	Bison	Kandiyohi	Turkeys
Clay	Sugarbeets	Anoka	Sod	Pipestone	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

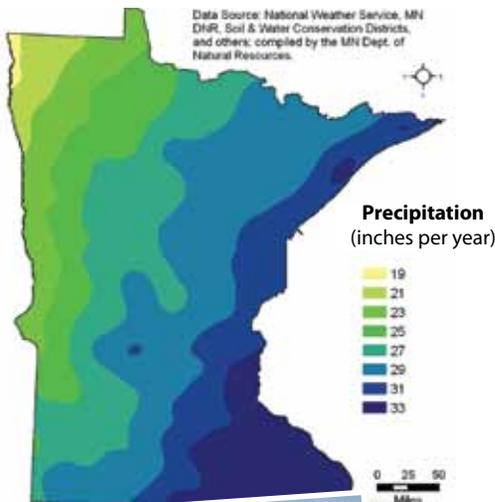
- Look at your dots. What do you notice about where things grow in Minnesota? Unscramble the letters to discover five things that make each growing area different from the others.

Hint: All the words appear somewhere on pages 4 and 5.

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

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?

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

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 again (page 4) to check your work.



Name the crop

Unscramble the letters to name this plant that cattle love to eat.

f a l a l a f

Your Answer _____

Name the main 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.



Ten Plants that Changed Minnesota

Which plants do you think most changed Minnesota and how we live today? Minnesotans were asked to nominate the main plants that changed our state. A committee of 12 experts then chose the top ten. You will meet the top ten plants in this year's AgMags as we talk about the role they played in the history of our state.

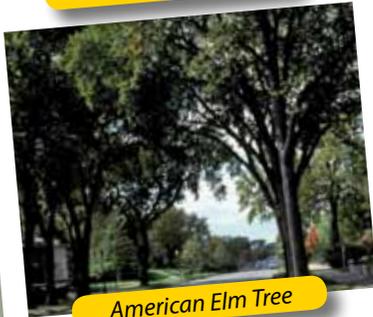
The Top Ten



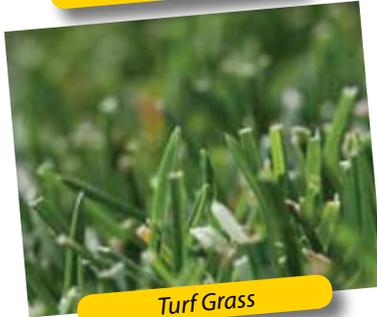
Alfalfa



Soybeans



American Elm Tree



Turf Grass



Apples



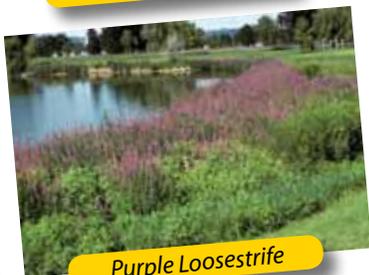
Wheat



Corn



White Pine



Purple Loosestrife



Wild Rice

Can you name the plant?

- First harvested by native peoples in canoes, this water-based plant has been a big part of their culture for thousands of years. Today, it is both harvested from lakes in canoes and grown in large wet paddies. Minnesota is a leading growing area for this crop. It is our state grain.

- This plant played a huge role in the founding of Minneapolis and many farming communities. It made Minneapolis the "Flour Milling Capital of the World" from 1880-1930. It is an important cash grain for farmers and a main ingredient in breads, cereals and many other food products.

- This majestic tree once covered much of northern Minnesota. Harvested for timber, its wood was used to build buildings, cities and towns in Minnesota and many other parts of the country. It has always been a favorite nesting site for bald eagles and ospreys.

Try This! Imagine you are voting on plants that most impact or improve your life. What plants would be on your list?

For more about the ten plants, check out:

www.arboretum.umn.edu/10plants.aspx



How has agriculture changed Minnesota's landscape?

The land that became Minnesota was once covered with prairies and grasslands, lakes and rivers, forests and wetlands. People came and their survival depended on these rich resources. Over time, human activities changed the landscape. During your lifetime the landscape will continue to change. You may even create some of those changes yourself.



From Hunting and Gathering to Farming

Before the first white settlers arrived, tribal communities lived at peace with the natural world. These native peoples left plants and animals alone unless needed for food, shelter and clothing.

The Ojibwe (Anishinabe) lived in the northern lakes and forest regions of what is now Minnesota. They hunted, fished, and harvested wild berries, fruits and wild rice. They planted corn, pumpkins and squash, and tapped maple trees for syrup and sweet treats. Meanwhile, in the southern and south-western plains lived the Dakota (Sioux). Their villages dotted the banks of the Mississippi, Minnesota, St. Croix and Cannon Rivers. Dakota men hunted for food. Dakota women were the farmers, raising corn, squash and beans.



Fort Snelling

By the 1820s the landscape was changing. Besides the Indian farmers, immigrants from Europe arrived. Fort Snelling was built where the Mississippi and Minnesota Rivers meet. The troops needed food, and Colonel Josiah Snelling ordered that 200 acres beside the Minnesota River be tilled for crops like corn and potatoes. Soon a lot of cropping was taking place around Ft. Snelling as immigrants settled nearby.



Free Land ... Head West!

The Homestead Act of 1862 allowed a citizen or immigrant to claim 160 acres of land not claimed by anyone else. This Act called out "Go West!" to thousands. Agriculture began to transform the prairies as the new homesteaders turned the sod and planted crops in the fertile soils. Small farms dotted the landscape. Families survived with a few kinds of food crops and a few farm animals.



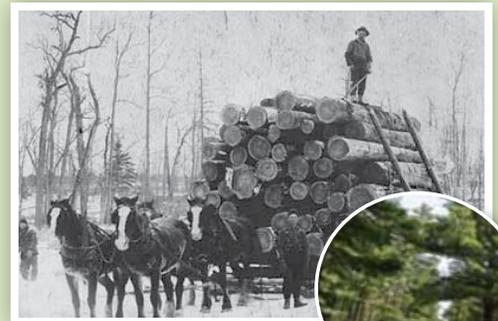
At the same time, the railroads brought huge changes as they moved people and products across the miles. Shops, businesses, towns and grain elevators sprang up along the tracks.

Photos Courtesy Minnesota Historical Society

Wheat is King

With new inventions of machines to help with the work, large farms became possible. Business people bought enormous tracts of land. By the 1880s, giant bonanza wheat farms spread across the prairies and the Red River Valley. Hundreds of horses and huge teams of farmhands and machines worked the fields.

Eventually bonanza farms produced so much wheat that a surplus was created. As profits fell, bonanza farms were divided and sold, making smaller farms again. Farmers grew a variety of field crops and animals.



Timmberrrrrrr!

While agriculture transformed the prairies, another growing industry was changing the northern forests. At the height of the lumbering era around 1900, over 40,000 lumberjacks were cutting timber in Minnesota's north woods. How did the logging of millions of white (and red) pine trees change the landscape of northern Minnesota?



Did you know Minnesota has an official state soil type? In 2012 Gov. Dayton signed a bill naming Lester as the official state soil of Minnesota. What is Lester, and where is it found?

Country

Q. If a rooster laid an egg on a slanted roof, which way would it roll?
A. No way. Roosters don't lay eggs.

Stranger: Look at that bunch of cows.

Cowboy: Not bunch, herd.

Stranger: Heard what?

Cowboy: Of cows.

Stranger: Sure I've heard of cows.

Cowboy: No, I mean a cow herd.

Stranger: Why should I care?
I have no secrets from cows!



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



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.)

- It was a record year for exports in 2011! Left to right, the flags are in order of largest importers. Which country imports the most MN ag products?



FUN and Food at the Fair

The All You Can Drink Milk stand at the Minnesota State Fair served 36,000 gallons of milk during the 12 days of the fair – that's 576,000 glasses.

Over 450 foods are available at 300 food concessions. Deep-fried candy bars, hot dish, spaghetti and meatballs, key lime pie, walleye and pork chops are a few of the 60+ foods-on-a-stick.

How many foods were new in 2012? Over 40. Some of them were

bacon ice cream, beef tongue caramelos (tacos), cranberry wontons, Ragin Ankles (pork shanks) and eggplant fries. Camel sliders were also a tasty treat. Camel meat is new to most Minnesotans, but eaten in some other countries.

Did You Know? All the foods at the fair are connected to what? Unscramble the letters to see!

g c l r e u i t a r u



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!



Game On... for Milk! The Olympic village cafeteria in London served 75,000 liters or 20,000 gallons of milk during the 2013 summer Olympics – that's 320,000 glasses.