



AgMag

Exploring Minnesota Agriculture
with Today's Youth

ISSUE

1

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Agriculture is Everywhere!

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 probably 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 your math by writing on paper? That paper comes from another agricultural crop—trees. Corn and soybean **by-products** may go into 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
live a day
without
agriculture?

There's just
no way!



Photo Courtesy Agri News

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.

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.

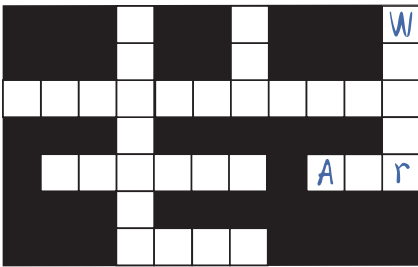
Which part of agriculture does each group of workers below fit into?

- 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. How can this be?

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!



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 **agribusiness**—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 agribusiness logos you might see in your home.













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?

Agribusiness

Raw Product

Processed Product

	1. Gold'n Plump	hogs	packaged chicken
	2. Hormel	phosphate (rock ore)	sugar
	3. Minn-Dak Sugar	oats (grains)	pickles
	4. John Deere	chicken	granola bars
	5. Simplot	wool	pepperoni and ham
	6. Kemp's	sugarbeets	steel farm machinery
	7. Pioneer	corn seed	ice cream
	8. Gedney	cucumbers	blankets
	9. General Mills	milk	ethanol
	10. Faribault Woolen Mill	iron ore	plant food and fertilizer

Watching the Weather

Weather can be agriculture's best friend or its harshest enemy. Good weather with the right amount of rain throughout the growing season is essential to good crops. The field photograph on the cover of this AgMag shows healthy crops growing in good weather conditions.

But weather is a mystery, different every day and every year. It all affects agriculture. Some Minnesota farmers had weather challenges this year. Examples are:

- A cold, wet spring meant many farmers got a late start in planting. Then, as crops began to grow, heavy rains flooded fields.
- In September, strong storms struck parts of central Minnesota as harvest season began. Widespread damage included Untiedt's orchard near Waverly. They were only days from picking when a 10-minute hailstorm destroyed nearly all of their apples and pumpkins.



Flooded southern Minnesota corn field. Photo courtesy Agri News.

Harvest time hail damage in Waverly, MN apple orchard.

Think & Discuss

1. How can late planting and flooded fields affect a farmer's success?
2. How does the loss of the apple crop at Untiedt's orchard affect the farm's owners and workers? The market stands that sell the apples from the orchard? The customers who buy them?
3. Why do farmers often say, "There's always next year" after a weather disaster?

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?

Dairy cows come in many colors and sizes. The largest number of dairy cows in the United States is the black-and-white breed called Holsteins.

Growing Areas



A Northeast



B Southwest



C Northwest

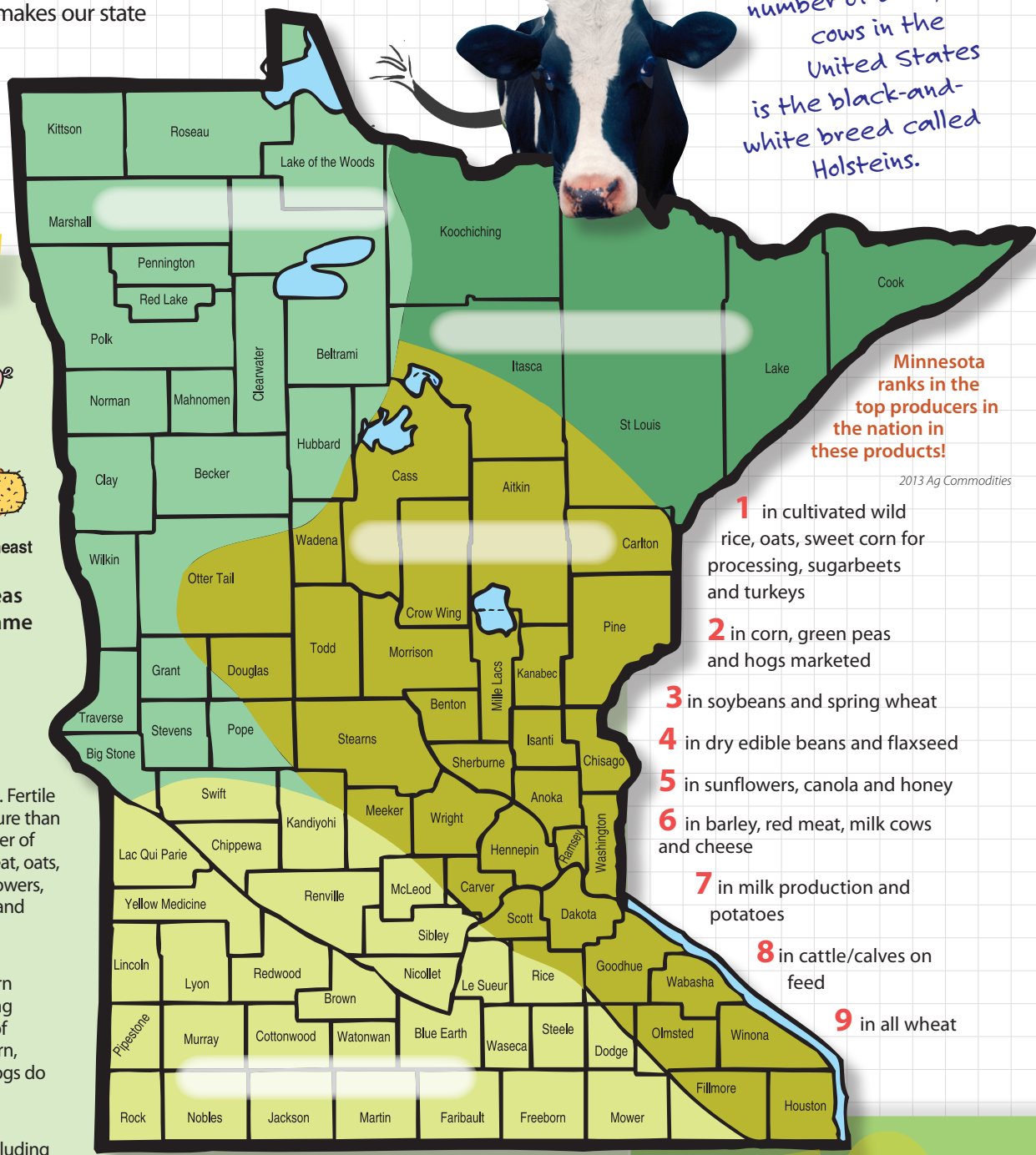


D Central/Southeast

Match these growing areas with the clues. 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.



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

2013 Ag Commodities

- 1 in cultivated wild rice, oats, sweet corn for processing, sugarbeets and turkeys
- 2 in corn, green peas and hogs marketed
- 3 in soybeans and spring wheat
- 4 in dry edible beans and flaxseed
- 5 in sunflowers, canola and honey
- 6 in barley, red meat, milk cows and cheese
- 7 in milk production and potatoes
- 8 in cattle/calves on feed
- 9 in all wheat

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

One bushel of whole wheat can yield 64 one-pound loaves of bread.

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

An acre is about the size of a football field.

The average potato is 75 to 80 percent water.

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

Find it on the Map!

- Find each county and see 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.



Some Minnesota farmers raise these animals for fiber.

Name the animal.

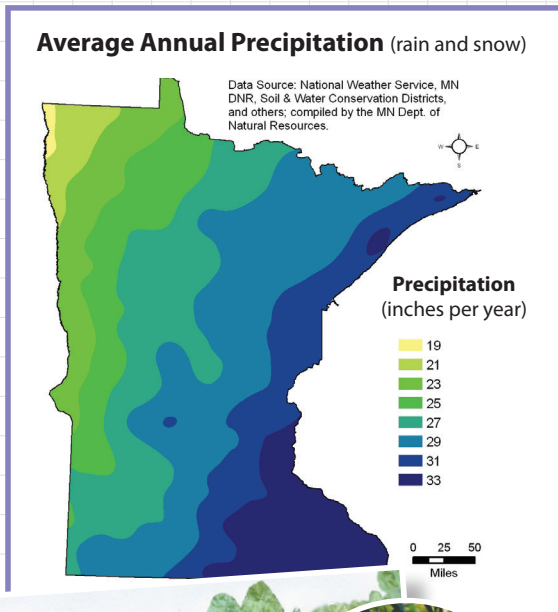
County	Ag Product	County	Ag Product	County	Ag Product
Marshall	Wheat	Martin	Hogs	Koochiching	Paper
Jackson	Soybeans	Morrison	Beef cattle	Aitkin	Bluegrass seed
Wabasha	Green peas	Otter Tail	Bison	Kandiyohi	Turkeys
Clay	Sugarbeets	Anoka	Sod	Pipestone	Sheep
Stearns	Dairy	Polk	Dry beans	Todd	Oats
Faribault	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.

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 thwaeer _____ gingorw saseno _____
 llafinar _____

Minnesota Rainfall: What and Where?

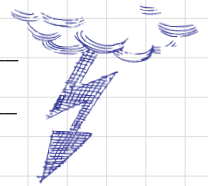


- Which growing area of Minnesota normally gets the least rainfall each year? _____

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!

Polk county leads the way in growing this crop. You'll find it in dozens of foods in your kitchen. Hint: It's sweet!

b t s u e s g a r e

Your Answer

Name the main growing area.

Your Answer



Minnesota's *Powerhouse* Crops

Thanks to our state's soil, climate and terrain, an amazing variety of field crops grow well in Minnesota. Most of our crops are used as food for people or for animals. Technology brings other uses for crops, too. Do you know we have ink, candles and biodiesel from soybeans? Or cat litter and packaging peanuts from wheat? Some skin care lotions come from wild rice. Ethanol produced from corn and blended with gasoline helps make renewable fuels. Medicines, livestock feed and shoe polish can come from sugarbeets. We even have warm blankets from a corn-based fabric called Ingeo. Read on for more about major Minnesota crops.

Alfalfa is the perfect food for dairy cattle. It has high protein, is easily digestible and is more nutritious than native pasture grasses. As farmers grew their dairy herds, they planted fields of alfalfa for hay. One important species of alfalfa was developed right here in Minnesota. Called Grimm alfalfa, it's named for the Carver County farmer who developed it with seeds he brought from Germany. It could withstand our cold winters much better than other alfalfa could. Dairy herds all over the United States are healthier and more productive thanks to Mr. Grimm's work with alfalfa.



Soybeans are legumes, members of the plant family that includes other beans, peas and lentils. Chinese people have grown soybeans for 5,000 years and called them "Yellow Jewel." Soybeans first came to the U.S. in 1804 as ballast for a ship. People thought they were useless and dumped them. Later we used them as a forage crop for animals. Then auto maker Henry Ford looked at soybeans as an industrial crop. A plastic steering wheel made by Ford was the first industrial use of soybeans. We learned that soybeans are not only powerhouses of protein for people and animals, but they have hundreds of uses.



Sugarbeets Western Minnesota and the Red River Valley are the nation's top spots for growing sugarbeets. The U.S. is third in the world, after Russia and France, in sugarbeet production. Did you know the entire sugarbeet plant is put to use? At harvest time, one machine cuts off the tops of the plants and another lifts the beets out of the ground. The tops become animal feed. The beets are processed to extract the sugar and leftover beet pulp feeds livestock.

Corn American Indians have grown corn (maize) for thousands of years. The first English colonists in America would have starved if the Indians had not shared corn with them, and shown them how to grow and use it. Sweet corn is what you eat canned, frozen or right off the cob, but you use products made from field corn every day. Components of field corn such as starch, syrup and oil are invisible ingredients in thousands of food products. Field corn is a major ingredient in livestock feed and industrial products, too. The U.S. is the world's largest field corn producer, consumer and exporter.

Wheat covers more of the earth's cultivated land surface than any other crop. It was first grown in Minnesota in about 1820. By the time of the Civil War wheat was a major crop. Our state's great rivers and lakes were the first shipping routes for wheat. Railroads later carried it across the nation. Meanwhile, grinding wheat into flour became a big industry. Through 1930, Minneapolis was the flour milling capital of the world!



Did you know?

Almost all our breakfast cereals are made of grass. Oats, barley, corn and wheat are all grasses.



Did you know? Wild rice is a native Minnesota crop. Hand-harvested wild rice is gathered by Native Americans from shallow lakes in Northern Minnesota. Today, wild rice is also grown in human-made paddies and harvested by machine. Wild rice is Minnesota's state grain.

This Minnesota county's name is the Ojibwe word for "wild rice."

22 - 2 3 x 3 17 - 4 51 ÷ 3 6 - 2 18 + 2 16 ÷ 8 85 ÷ 5

20

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Minnesota's Early Farmers



Indian family guarding corn from blackbirds.



Native Americans

Long before white settlers arrived and long before statehood the Ojibwe (sometimes called Anishinabe) and the Dakota Native Americans were farming. The Ojibwe lived in the northern lakes and forests of what would later become Minnesota. They hunted and fished. They harvested wild berries, other plants and wild rice.

The Dakota settled in the prairie areas in south and southwestern regions of what is now Minnesota. Their villages dotted the Mississippi, Minnesota, St Croix and Cannon River banks. Dakota men were hunters and warriors; Dakota women were farmers. They grew corn, beans and squash, a crop trio called the Three Sisters in native lore.

Early Immigrants

Fort Snelling, built where the Minnesota and Mississippi Rivers meet, was our first European farming community. By 1823, wheat, oats, corn and vegetables were grown to feed soldiers at the fort. Fort Snelling was a military base but its soldiers were not there to fight. Their main job was to enforce U.S. laws related to the fur trade.

Immigrants from Europe began arriving in the area soon after Fort Snelling was established. They settled on small plots of land and were **subsistence farmers**. They grew just enough food to feed themselves and their farm animals with maybe a little left over to trade for things they needed. It was a tough life, with little money, meager tools, crude homes and few household goods. Subsistence farmers were **diversified**, meaning they raised a variety of crops and livestock. Many planted oats, potatoes, corn and beans. They kept a cow or two, a few chickens and pigs, and maybe a few sheep.

Early Fort Snelling



Soddy, mid 1800s

Free Land ... Westward Rush

To make more room for settlers, the U.S. government wanted more land. Treaties were signed with the Ojibwe and the Dakota to expand white settlement.

The Homestead Act of 1862 opened up millions of acres of land to settlers. To qualify for 160 free acres, settlers had to live on and farm the land for five years. This promise of land brought 75,000 people, mostly from Europe, to Minnesota within three years. The new homesteaders became sodbusters, plowing the prairie soil and planting crops. Many of the first homes were soddies built of prairie sod. Small diversified family farms dotted the landscape. Hand power was changing over to horsepower. Farm machinery like steel-blade plows, mowers, reapers and harvesters were invented to help with the work.

Bonanza Farms

By 1875, wheat was our king of crops. Production grew as new railroads connected farms to markets. Between 1875 and 1890, the booming wheat market led to huge **bonanza farms**, especially in the Red River Valley. Funded by rich business people from eastern states, wheat farms covered thousands of acres. Hundreds of horses and huge teams of farmhands and machines worked these **specialized farms** (farms that grew mainly one crop). Most of the wheat was shipped to flour mills in Minneapolis.

Eventually, bonanza farms produced so much wheat that a surplus (oversupply) was created. Wheat was no longer such a profitable crop, so many bonanza farms were divided and sold, making smaller family farms again. Many different kinds of farms developed across the state. Families began growing corn, oats and a new hay crop called alfalfa. Some planted fruit trees. Others chose dairy farming, especially in the rolling countryside of southeastern Minnesota.

From earliest Native American farmers to arrivals from another continent—all were pioneers of Minnesota Agriculture!

Family homestead, late 1800s



Bonanza farm, late 1800s



Fast N FUN



Q. If a rooster laid an egg on a slanted roof, which way would it roll?

A. No way. Roosters don't lay eggs.

Q. What does a Minnesota farmer plow but never plant?

A. Mous

MIL
MIL
MIL



FUN and Food at the



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 500 foods are available at 300 food concessions. How many foods were new in 2014? 28. Bison dogs, caramel apple ice cream, jonnypops, pizza tots and pretzel curds are a few of them.

What is it?

This vegetable's outside is thrown away so the inside can be cooked. But the outside of the inside is eaten and the inside of the inside is thrown away.



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

A Dozen Ways to Say Bread

Match the bread to the country.

- | | |
|--------------------|----------------|
| 1. Ciabatta | United Kingdom |
| 2. Naan or Chapati | Norway |
| 3. Soda Bread | India |
| 4. Pita | Mexico |
| 5. Scone | France |
| 6. Injera | Poland |
| 7. Tortilla | Greece |
| 8. Lefse | China |
| 9. Baguette | Ethiopia |
| 10. Bagel | United States |
| 11. Wonton | Italy |
| 12. Johnny Cake | Ireland |



CHS: It's about agriculture!

The brand new stadium being built in St. Paul for the St. Paul Saints baseball team has been named **CHS Field!** CHS is a cooperative agriculture business owned by and serving thousands of farmers. Even the team mascot, Mudonna, has an agriculture connection. Why?



Have you visited the Miracle of Birth exhibit at the Minnesota State Fair? CHS brings us that! There were **148 piglets** born in the exhibit this year, bringing Mudonna lots more friends!

The Three Sisters

Many considered corn, beans and squash 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. Beans absorb nitrogen from the air with the help of bacteria living on their roots. Corn needs a lot of nitrogen to grow. Corn provides support for climbing beans. Large squash leaves shade the soil, slow weed growth and discourage animal pests.

Many customs, stories and celebrations have been created about the Three Sisters. Research to learn more!



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