AgMag
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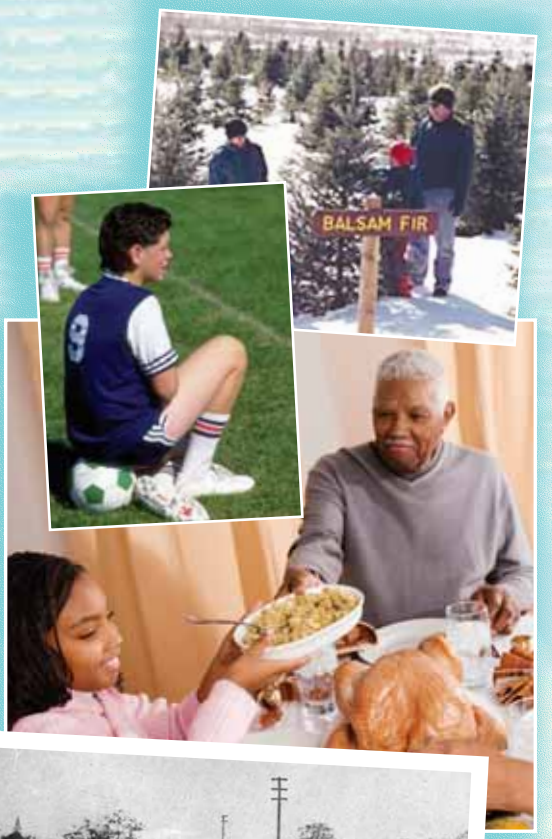
The Magazine of Minnesota Agriculture in the Classroom

From The Land To You!



What would people living in towns and cities do if there were no farmers? Where would they get food? Wool? Building supplies? Flowers, trees and shrubs? What would growers do if there were no town folks to buy their food or wool or wood or shrubs? What would it be like if each of us had to grow everything we need all by ourselves?

City people and growers need each other. We are **interdependent.** We buy and sell among ourselves so everyone can get the food, shelter and clothing they need. It all starts with agriculture. Agriculture grows what we need and changes it to forms we can use. Getting those things into our hands is part of agriculture, too.

When you put on a soccer jersey or play on a sod field, do you think about an agriculture connection? When you take a picture, do you think about beef products that went into the film? As you take a bite of cereal, do you ever think about the soil, water and all the workers between the grain field and your cereal bowl?

Agriculture starts with soil, seeds, water and energy from the sun. It continues as millions of workers and billions of dollars change and move agricultural products from the land to you. Agricultural products come to you through supermarkets, lumberyards, drugstores, clothing shops, Christmas tree lots, garden centers, restaurants and dozens of other places.

Ag makes the world go round!
Could you have an ag-less day?
There's just no way!

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

STEPS ALONG THE WAY

Where do the supplies come from that are made (processed) into the things we eat, wear and use every day? The **raw materials** come from the land, through the work of farmers and growers. Those raw materials are possible only because of the **natural** and **renewable resources** of planet Earth. Your wool sweater, your strawberry jam sandwich, your hockey stick—they're all thanks to renewable resources.

Photo Courtesy University of Minnesota Agricultural Experiment Station

Photo Courtesy Jennie-O Turkey Store

Photo Courtesy Jennie-O Turkey Store

Photo Courtesy Dave Hansen

Photo Courtesy University of Minnesota Agricultural Experiment Station

What happens to the raw materials between the land and you? It depends on the product. Which goes through more steps: grain between the field and your cereal box or carrots between the field and your salad bowl? What about your quarter-pound burger? It started out as a thousand-pound steer eating corn, soybean meal and grass. Your bread began as "amber waves of grain" and your wooden hockey stick as a tree.

Raw materials go through a cycle of processes before they get to us in forms we can use. After all, a handful of wheat kernels or a hunk of wool freshly sheared from a sheep wouldn't do us much good in these forms. The food, clothes and other things we use from agriculture all go through a cycle that:

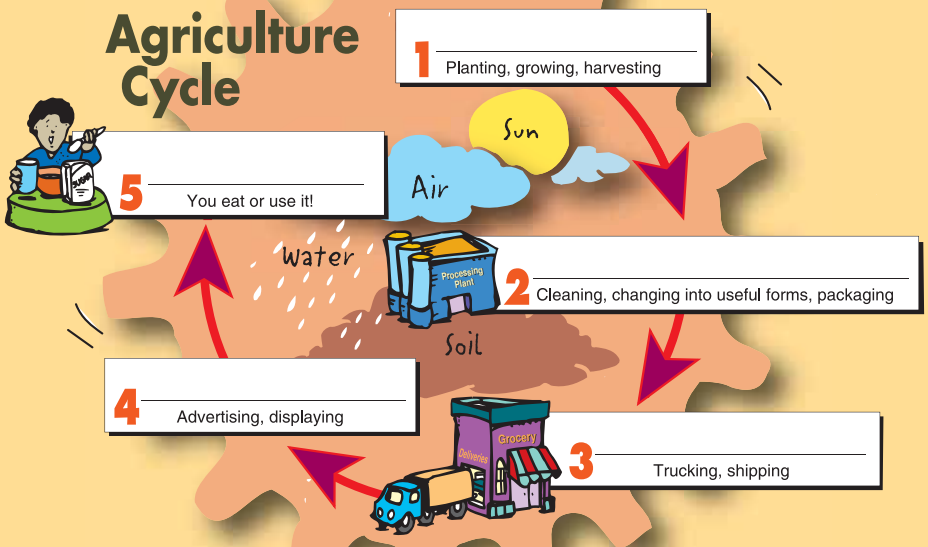
- starts with sunshine, water, soil and plants
- uses energy and equipment
- provides jobs for thousands of workers
- changes forms and uses of raw materials and
- gets agriculture products to us in forms we can use!

The steps in the boxes below are part of most cycles.

Consuming (People Using) | **Producing** | **Processing** | **Marketing** | **Distributing**

1. Label each step in the agriculture cycle.

Agriculture Cycle



2. In the circle on each photograph, write the number that matches its place on the Agriculture Cycle.

3. Write these activities into the cycle above wherever you think they happen. Some may belong in more than one place.

- testing
- cultivating
- buying
- selling
- inspecting
- storing
- researching
- eating
- planting

Think & Discuss

Why are sun, air, water and soil part of the picture?

_____

_____

_____

_____

_____

Plants AND Animals

They're the only living things that make their own food. They are also the source of food for every other living thing. Plants become our medicines, fibers, paper products, cosmetics, spices and building materials. We burn plants for fuels. That includes wood as well as the fossil fuels that came from plants eons ago. We eat plants — roots, leaves, stems and fruits. Everything else we eat also eats plants! Finally, we depend on plants for the oxygen we breathe. Without plants, we would not survive.

Think & Discuss

More than half the world's population depends on rice for a daily meal. Another one-third eats wheat in some form every day. One-fourth uses corn and corn products every day. Soybeans are another major crop for both people and animals. More than three-fourths of U.S. farm animals are fed corn and soybeans.

What have you eaten or used today that came from rice, wheat, corn or soybeans?

Only about one-fifth of the land in the United States is suitable for growing crops. The rest has poor soil, too little rainfall, or rocky, rough surfaces that machinery can't handle. Forests cover millions of acres. Even though we can't grow food crops on these lands, **livestock** can often graze there. As livestock eat grass, they turn it into food and fiber people can use. Animals provide the eggs, milk, fish, burgers, steaks, chops and roasts that give us protein. They produce the wool and leather people use for clothes, shoes and baseball gloves. Animal fats are important in soaps, cleaners, cosmetics, paints, plastics and much more. Thanks to animals we have better lives.

Think & Discuss

Millions of people around the globe depend on animals for food, clothing and shelter.

What have you eaten or used today that came from animals?

Domestic turkeys raised on farms are too heavy to fly, but they lift their wings to help cool themselves.

Meet a Turkey

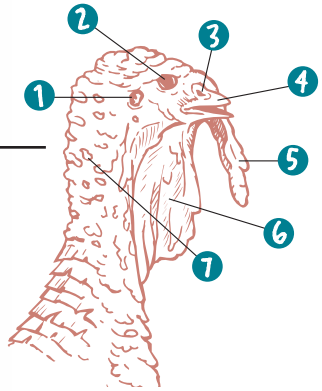
Turkeys are BIG players in Minnesota agriculture. They've been around longer than Minnesota agriculture. Turkeys roamed the Americas 10 million years ago! These birds may have a reputation for not being so smart, but they really have all the right stuff. Many parts of a turkey's body are **adaptations** that serve a purpose—or that served a purpose long ago for turkeys in the wild.

To learn more turkey trivia visit
www.minnesotaturkey.com
and the Manitoba Turkey Producers at
www.turkey.mb.ca/kids_frame.html

The average turkey has 3,500 feathers. What happens to feathers? See page 8.

Match it Up

Look at the drawing and match the body part to its description below.



_____ **A. Snood**
Long, red fleshy growth from the base of the beak that covers the beak and helps release extra body heat

_____ **B. Nostril**
Breathing vents on the side of the beak

_____ **C. Eye**
Has an inner lid that closes sideways to remove dirt, and an outer lid that keeps out light

_____ **D. Wattle**
Fold of red-pink fleshy skin on the upper neck to help release extra body heat

_____ **E. Beak**
Pointed and sharp for scratching and picking up food

_____ **F. Caruncles**
Small warty growths that decorate the top of the head and the neck and make the turkey look good (to another turkey!)

_____ **G. Ear**
Flat hole for hearing, protected with a covering of fine feathers

On pages 4 and 5 you'll see how the agriculture cycle works as we track turkeys from the farm to your table.

Tracking a Turkey

Turkeys and other poultry are important sources of nutrition throughout the world. We are gobbling up turkey today like never before. Today's healthy eaters want meat that's high in protein. They want it low in fat, cholesterol and calories. That's turkey and chicken, served and enjoyed all year 'round.

Where do turkeys start out, and how do they get to our tables? Let's find out!

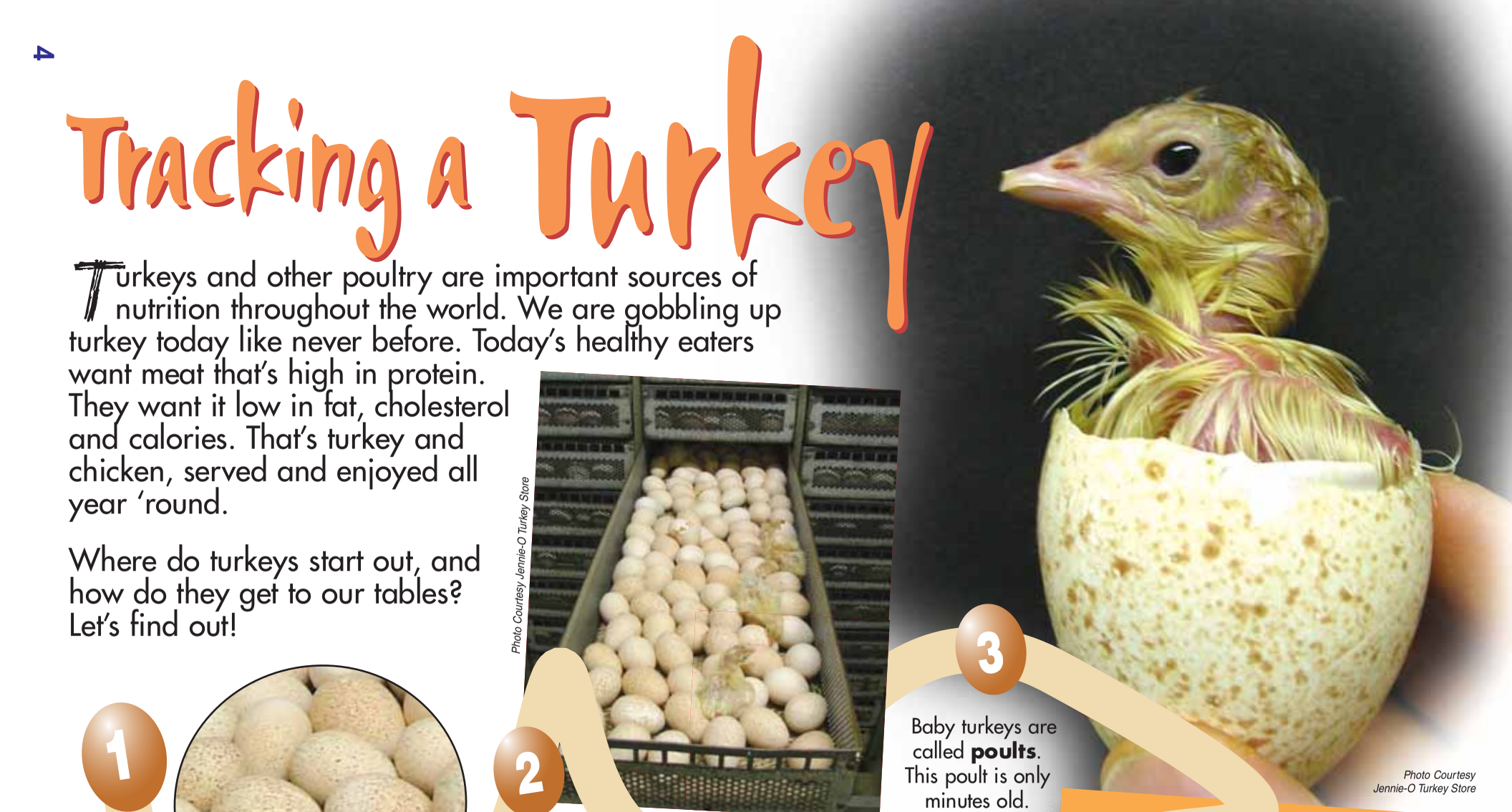


Photo Courtesy Jennie-O Turkey Store

Photo Courtesy Jennie-O Turkey Store

1 Turkeys start out as fertilized eggs laid by female turkeys (hens) at breeding farms.

2 Fertilized eggs are kept warm in huge incubators at hatcheries. Eggs hatch after 28 days.

3 Baby turkeys are called **poults**. This poult is only minutes old.

4 Turkey farmers take special care for the health and safety of their birds. They provide shelter to protect the birds from predators and bad weather. They carefully heat and cool their barns to make sure turkeys stay comfortable. A balanced ration of corn, soybeans, other grains, vitamins and minerals gives the birds good nutrition. Fresh water is available to drink at all times. Six hundred Minnesota turkey farms raise 44 million turkeys a year.

Turkeys belong to a family of livestock called **poultry**, which includes chicken, geese, pheasant, quail and ducks.

5 Turkeys are not kept in cages. They can roam the barn. **Hens** are full grown at about 15 weeks and **toms** at about 18 weeks. Most turkeys are sold by farmers to processing plants.

Photo Courtesy University of Minnesota Agricultural Experiment Station

Photo Courtesy Minnesota Turkey Council

Raising a 30-pound tom turkey takes about 75-80 pounds of feed.

6 Turkeys are moved by special trucks from the farm to the processing plants. They are checked for good health and quality as they come from the farm and many more times during the processing cycle.

Photo Courtesy Minnesota Turkey Council

Gobble, gobble is tom turkey talk. If the sound is click, click, it's a hen you're hearing.

7 Processing plants have many different departments. Here, workers are packaging turkey products and getting them ready for shipping.

Photo Courtesy Jennie-O Turkey Store

8 Labels on these boxed turkey products tell which farm, flock and processing plant they came from. This is important for food safety.

Photo Courtesy Jennie-O Turkey Store

9 Turkey products travel from processing plants to grocery stores and other markets in refrigerated trucks.

Photo Courtesy Jennie-O Turkey Store

Ben Franklin wanted the turkey to be our national bird. What is our national bird?

Americans eat 45,000,000 turkeys on Thanksgiving Day alone.

10 Turkey meat is made into many products. Name the products you see here.

_____

_____

_____

_____

Circle those you have eaten. Which are your favorites?

Agriculture in a Hungry World

In your first two AgMags this year, you learned a lot about agriculture in Minnesota and the United States. Our good climate, soil, water, weather, science and technology make American farmers the best food producers the world has ever known. Our farmers feed our whole nation. They also grow enough extra food to export millions of tons to the rest of the world. Many other countries produce a lot of food, too. Still, we hear about **malnutrition** and world hunger.

Why Are They Hungry?

There is enough food to feed everyone in the world. So why are some people starving? They simply can't get the food they need. Solve the crossword puzzle and you'll see some of the reasons food does not reach people who need it in many parts of the world.

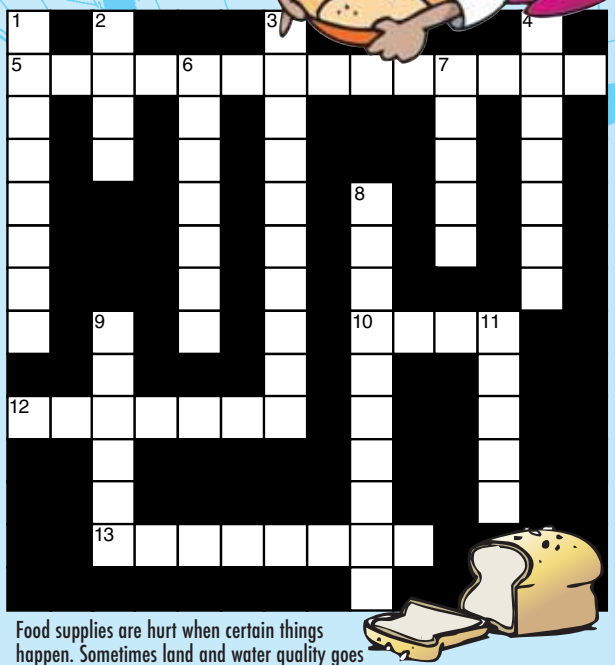
List some places you've been hearing about in the news where people suffer from hunger. What might be some reasons their needs are not met?

ACROSS

5 Reliable ways of moving things from place to place
10 Poor growing season; ____ failure
12 Too little rain to grow crops
13 Rotting and molding

DOWN

1 Robbing
2 Fighting in or among nations
3 Leaders of a country
4 Too little money
6 Clean, dry places to keep food
7 Buying and selling between countries
8 Changing raw products into forms we can use
9 Overflowing of rivers and streams
11 Insects and rodents



Food supplies are hurt when certain things happen. Sometimes land and water quality goes down. Pollution, natural disasters like floods, droughts, insects and over-planting one kind of crop can cause this damage. Sometimes people don't have the technology to produce and protect crops.

It takes all the world working together to solve hunger problems.

ON THE WEB

What's Your Ecological Footprint?

How many Planet Earths would be needed if everyone lived like YOU do? Take the online quiz at Earth Day Network www.myfootprint.org/

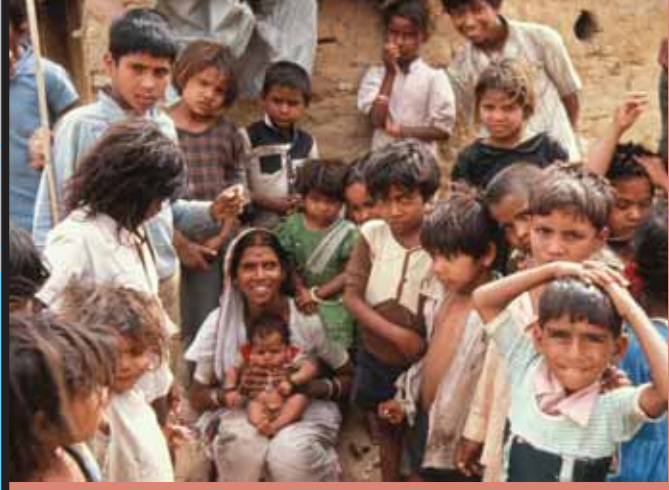


Photo Courtesy Dave Hansen

More Mouths to Feed

On November 20, 2006, the world population was over 6,550,000,000 and rapidly growing. If the current growth rate continues, the number of humans on the planet could double to 12 billion by 2050. All will need food, clothing, water and shelter, roads and schools. Demand will grow for sewers, power plants, homes, factories, malls and airports. Much land will be taken out of farming to meet those needs.

Add population dots for the year 2006 and year 2050 on the graph below. Connect all the dots to see the change in population growth. Most of the people will live in countries that are **less-developed** and where people have low incomes. They will live in cities and be consumers, rather than producers, of food.

Figure and Compare!

Each day we add about 230,000 people to our world. How many people are added in an hour? Each minute? Each second?*

Two and one-half acres per person are needed to provide for every person's needs each year. Where will the food come from for all these people? That's the job of agriculture. Scientists and farmers are working hard to produce more food per acre.

ON THE WEB

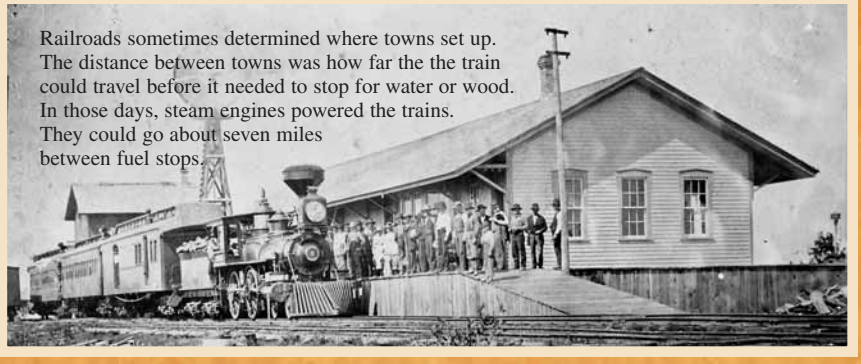
The clock is ticking on this web site to show you what's up in world population.

www.census.gov/ipc/www/clock2.html

* See answers on page 8.

Transportation Connects Agriculture, Places and People

Rivers, lakes and rough wagon trails were main ways to travel in Minnesota 150 years ago. Early towns and cities sprang up along the Mississippi and its tributaries. In the early 1850s people began to clamor for railroads. The first train puffed into St. Anthony (now Minneapolis) in 1862, connecting it with its sister city of St. Paul.



Railroads sometimes determined where towns set up. The distance between towns was how far the the train could travel before it needed to stop for water or wood. In those days, steam engines powered the trains. They could go about seven miles between fuel stops.

Photos Courtesy Minnesota Historical Society

Rails Across the Land

As the Civil War ended in 1865, Minnesota had 22 miles of railroad. Workers laid track as fast as they could. They barely kept ahead of the arriving trains! Thanks to trains, more newcomers could settle inland instead of mainly along the waterways.

By 1880 Minnesota Territory had more than 3,000 miles of tracks. Rails served almost every town. Trains brought new settlers, mail, news and goods faster and more often than ever before. Imagine how exciting it was to hear the train whistle coming! The population kept growing, and trains made it happen.

By 1883 the Northern Pacific completed its road to the Pacific Ocean. Now Minnesota was connected to the west coast!

What's the railroad connection?

The Homestead Act of 1862, a new law, gave up to 160 acres of land to settlers who would build a house on it and farm there for five years.

From Farm to Market

Before trains, farms were small. Farmers who grew more crops than they needed sold them to people nearby. The train made it possible to buy and sell with people far and wide. This was good news for farmers. They could reach many more buyers. The more they grew, the more they could sell. The more they sold, the better off they'd be. They bought more land, farms got bigger and machines were invented to help with farm work.

As railroads crossed the land, elevators soon dotted the horizon. Farmers loaded grain into horse-drawn wagons and hauled it to the nearest elevator. The elevator owner bought and stored the grain. He sold it to flour mills and other customers. Then it was loaded into boxcars and shipped to buyers everywhere.

Faster and Farther

People could travel from Lake Benton to St. Paul in less than a day. They could travel all the way to California by rail and get there weeks sooner than by horseback or wagon. Mail and supplies arrived faster than ever before.

Railroads were king from 1880 until 1920. In your next AgMag, you'll read how roads and highways carried people and agriculture faster yet.

Flour Mill and Elevator, New Richland, MN
1910

Why are they called elevators? Grain is lifted in order to load it into railroad boxcars. Conveyors lift grain to an overhead system of belts and chutes that carries it into different storage bins. From the high storage bins, grain drops by gravity into waiting railroad cars.

1860 Land travel was mainly by horseback or animal-drawn wagons and coaches

1862 First Train (St. Paul to St. Anthony)

1880 Passenger and freight trains crossed the state

1883 Railroads reached the Pacific Ocean

1900-1920 Trains reign but automobiles and trucks appear

Continued next issue!

GRAB BAG

Answers: Page 6

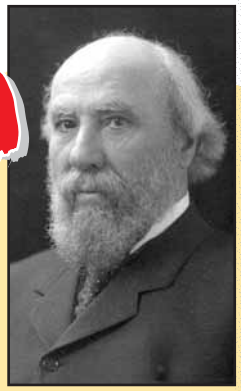
Figure and Compare

Rounded figures: Hours 9,600; Minutes 160; Seconds: 2,700

Country Corn Q. How can you get a turkey to fly?

A. Buy it an airplane ticket.

Who's This?



Photos Courtesy Minnesota Historical Society

This man was the most successful and powerful of all the people who ran railroads in Minnesota. Starting as a shipping clerk on the St. Paul wharves, he loved transportation and saw how it could help the country grow. He combined small railroads to create the Great Northern Railway. His nickname was The Empire Builder.

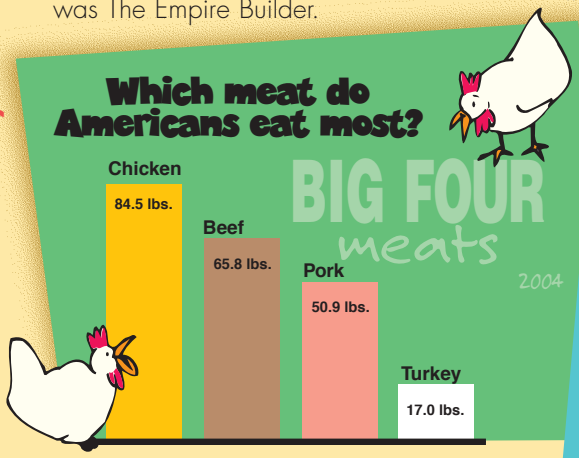
The Scoop on Poop

Turkey manure is hot stuff in Benson, Minnesota. This city has built a power plant, called Fibrominn, that runs on it! Minneapolis-based Xcel Energy helped to build the **biomass** plant. The plant will use 700,000 tons of turkey litter a year. Minnesota law requires Xcel to buy 125 megawatts of electricity that's made from biomass energy. The new Fibrominn plant will provide 55 megawatts … all thanks to turkey poop!

Pull out a Minnesota map. Use it to locate and mark Benson on this map. Mark with an "X" the seven top Minnesota turkey counties, too: Kandiyohi, Stearns, Swift, Morrison, Todd, Meeker, Ottertail.

Turkey manure is great organic fertilizer, too. Farmers and gardeners use it to enrich their soils.

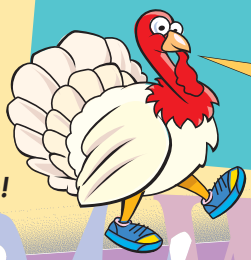
Which meat do Americans eat most?



We're TOP Turkey!

In 2005, Minnesota led the nation in turkey production. The top ten turkey-producing states are listed below. The trick for you is to label each state using the postal abbreviation. Then color it on the map!

1. Minnesota
2. North Carolina
3. Arkansas
4. Virginia
5. Missouri
6. California
7. Indiana
8. Pennsylvania
9. Iowa
10. South Carolina



What can you infer about where turkeys are grown?

Food Miles

How far does food travel before it gets to your plate? Unless it's Minnesota grown, our food travels an average of 1,300 miles. What's the easiest way to cut down on your food's gas bill? ***Eat locally grown!***

On the WEB

Each year, more than 2 billion pounds of feathers are produced by the U.S. poultry industry. That's enough to fill more than a billion pillowcases, a good reason to recycle the feathers. How? Find out here:

ON THE WEB "Going Coo Coo for Chicken Feathers"
www.ars.usda.gov/is/kids/animals/story1/story1.htm

How did trains help the United States spread across the continent? Discover how transportation has changed our nation. Go to:

ON THE WEB www.americanhistory.si.edu/onthemove/exhibition/

Mystery Photo

ON THE WEB What's this? To find out, go to
www.mda.state.mn.us/maitc

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