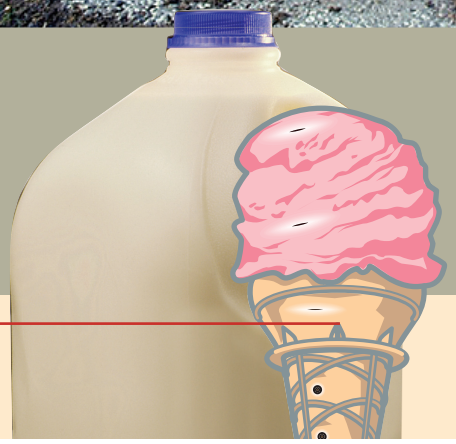
FOOD, LAND & PEOPLE

from farm to fork

Cows produce meat and milk that becomes high-energy foods. A typical dairy cow produces 60 pounds of milk per day. That milk can then be processed, packaged and distributed so you can enjoy your favorite flavored ice cream cone.

Deseret News Newspapers in Education is proud to join with Utah Agriculture in the Classroom and Utah State University Extension to bring an awareness to readers, young and old, of the importance of agriculture in our daily lives.



newspapers in education
Deseret News

about agriculture

On the average, American consumers spend less than 10 percent of their disposable personal income on food. This is lower than any other nation in the world.

Agriculture is our "lifeline" through the food we eat, the clothes we wear, the detergents we use to clean those clothes, the homes we live in, the couches we sit on, the sports equipment we play with, the ink and film we produce with, the crayons, chalk and pencils we write with, the shampoo and lotion we use for personal grooming, the strings on musical instruments we listen to, the drywall and lumber we build things with, the fuels to power our vehicles and the sutures doctors use in surgery.

Understanding the science of plants, animals, soils and water in our environment has led America to the most productive agricultural system the world has ever known. We have the safest, most abundant, least expensive food supply of anywhere in the world. Less than 2 percent of our population produces the harvest for all, but nearly 20 percent of our total labor force is involved in our food and fiber industry.

There are currently 2 million farmers in the United States. The United States Department of Agriculture defines a "farm" as being a unit with gross sales of $1,000 per year. If we alter that definition of "farm" to be a unit with gross sales of $10,000 per year or more, the figure drops to 750,000 who qualify as "farmers."

According to the Grocery Marketing Association, there are 150,000 grocery stores in the United States. Dividing the number of farmers by the number of grocery stores, that means 5 farmers are needed to fill the shelves of each grocery store.

However, 40 percent of food produced in the United States is exported, which means really 3 farmers stock United States' grocery stores. But because

reports show Americans eat 50 percent of their food outside the home (restaurants, school lunches, vending machines, etc.) and because farmers must also provide that food, it means that **only 1.5 farmers are left to supply each of the nation's grocery stores.**

Countries and percent of income spent on food that is consumed at home:

United States	7.1%
United Kingdom	10.2%
New Zealand	10.9%
Sweden	12.9%
Australia	14.9%
Japan	15.9%
Germany	17.1%
France	17.7%
Israel	18.1%
Italy	19.2%
Spain	20.5%
Mexico	24%
South Africa	25%
India	48.4%

EVENTS IN AGRICULTURE HISTORY

1493

Christopher Columbus brought animals, fruits and vegetables to America.

1585

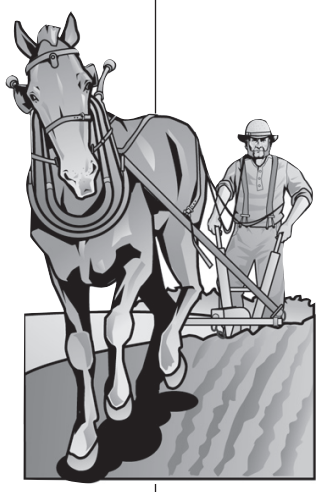
The potato was introduced to Spain from South America.

1607

Colonists planted grains, fruits and vegetables.

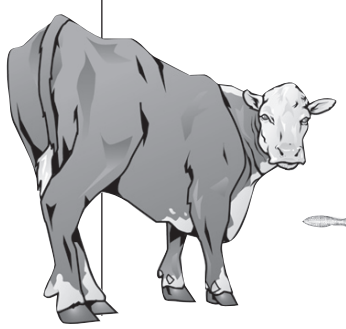
1609

American Indians taught the colonists how to grow corn.



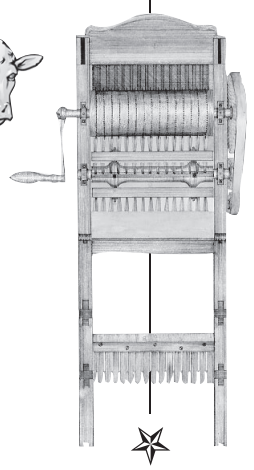
1731

Jethro Tull introduced the horse-drawn cultivator.



1783

Improved cattle were introduced.



1793

Eli Whitney invented the cotton gin.

The five **f's** of agriculture

Around 1760, there were 5 million people living in this nation, with 90 percent of them self-sufficient because of their farming lifestyles. Now, over 200 years later, with more than 280 million people living in America, less than 2 percent of Americans are still farming.

Agriculture reaches past the farm. It has become an industry that not only includes farmers and ranchers but also urban and suburban workers who process, package and transport food to America's customers.

Agriculture is everywhere, but what exactly, is it? Perhaps the best way to describe agriculture is to explore its Five F's. The Five F's of agriculture employ nearly 20 percent of our country's workforce and about 17 percent of Utahns.

farming

is the actual production of food and fiber derived from plants and animals. Farmers use natural resources such as soil, water, air and sunshine. Farmers must understand economics, business, mathematics and the science involved in getting their crops and animals to market. The science involved in agriculture includes the knowledge of ecosystems, soil, water, weather, chemistry and plant and animal biology.

One of the greatest threats to farming in America is the rapid loss of farmland to commercial and residential development. Urban sprawl and population growth, combined with low commodity prices and increasing costs, have left American farmers struggling to survive.

Forecasters are predicting that Utah's population will increase by 50 percent over the next 20 years. Homes, schools, malls, golf courses, freeways, restaurants and a host of other places are fast becoming the consumers of irrigated farm ground, wetlands and mountain habitats.

A recent report from the Utah Department of Agriculture and Food stated that Utah is the second-fastest growing state in the country for housing units. That report follows a USDA study showing that Utah is losing its farmland to development. The new homes being built in Utah are being built on some of the state's best farmland.

Many farmers want to preserve their land but development pressures often force them to sell. It is often thought that land development generates enough tax income to support urban newcomers. However, land development and the additional people it brings into an area can raise taxes.

food

is made from the raw products taken from the farm. Some products may be eaten raw, like peaches, or processed into a different product, such as peach jam. Some raw food products, such as wheat, must be processed before they are eaten. For example, bread is a much more digestible way and a better-tasting way of eating wheat than eating whole wheat seeds.

The food industry is the processing and distribution of food. There are many food industry careers: food scientists and engineers, food processors (cooks), package designers, marketers, business people, truckers and grocers and their stores.

Farmers and ranchers work with the cycles of weather, soil, water and other ecosystems to feed our country and a growing world population.

follow the path

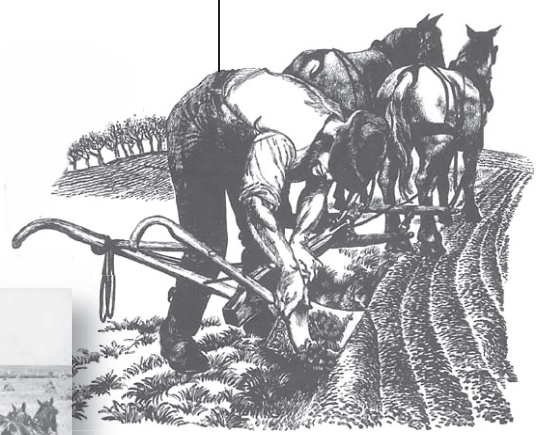
Can you create a path from the foods you eat back to the plants and animals produced on farms and ranches? Remember to include the processing, such as wheat being made into flour. Don't forget the transportation necessary to bring the products from the farm or ranch to the processor, to the grocery store and finally to you! Look in the Deseret News for some favorite foods on your food paths. Circle each one you find.

1798

Johnny Appleseed planted apple seeds.

1836

Cyrus McCormick demonstrated his horse-drawn grain reaper.



1837

John Deere began manufacturing plows.

1843

Sir John Lawes developed commercial fertilizer.

1850

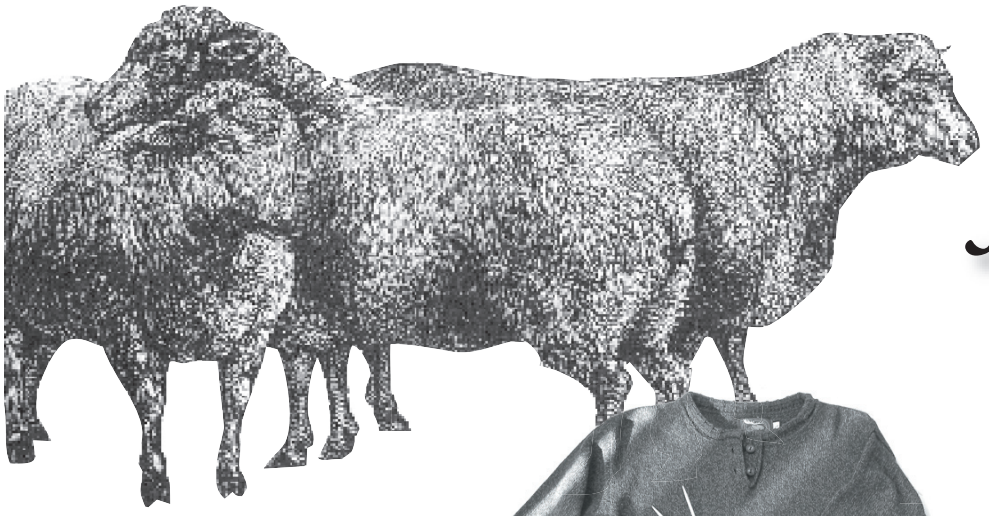
Alexander Twining invented the refrigerator.

1854

Self-governing windmill perfected.

1856

Patent issued for condensing milk.

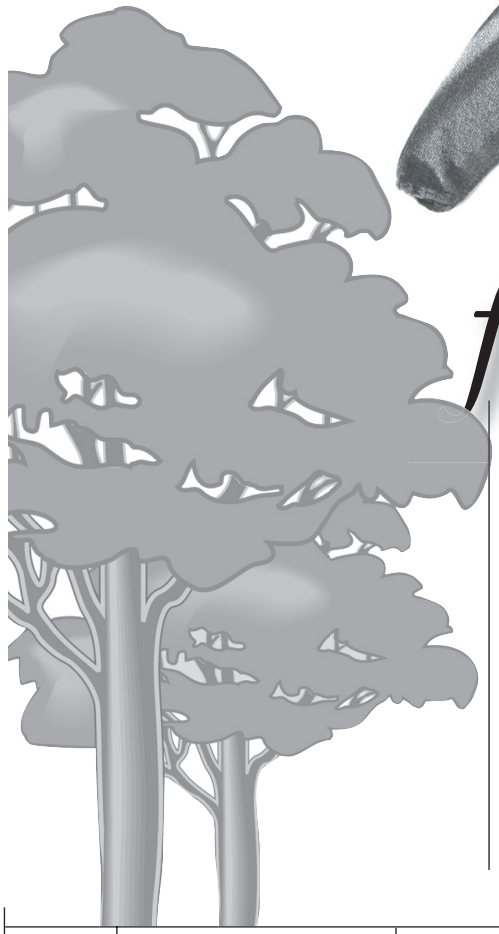


fiber

is the word farmers and ranchers use to describe the raw product for fabric. The two most important farm-produced fibers are wool and cotton.

Wool is the hair of a sheep that is shorn, washed, carded and then spun into yarn, knitted or woven into fabric or cloth that can be made into clothing, blankets, carpet and other items.

Cotton is a plant product that is grown from a plant and harvested by machinery. The cotton fibers are also spun into thread and woven into fabric to be used for clothing, tablecloths, towels, sheets and many other items.



forestry

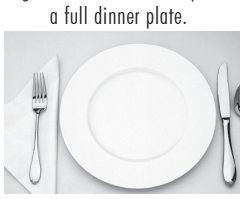
in the context of farming, is the cultivation of trees. The U.S. Forest Service is administered under the Department of Agriculture, but forestry is also a science. Agriculturally, many private forests are grown to provide paper and wood products. Agroforestry is about more than simply planting trees. The key is to maximize the number of beneficial connections formed between trees and other farm elements. In every way, agroforestry is concerned with using trees to re-create some of the beneficial connections and natural processes that support sustainable productivity.

flowers

are part of the “green industry,” which includes turf. The primary use of these "crops" is aesthetics or beauty. Houseplants, cut flowers, trees and grass make a positive difference in home, work and play environments. Total yearly sales in Utah's floriculture industry for 2001 (most current statistic) was $30.6 million. Of those sales, $8.4 million was for potted flowers; $4.2 million was for foliage for indoor or patio use; $18.0 million was for bedding and garden plants.

Fun facts

America's farmers and ranchers are water users, not water wasters. The water they use produces food. Agriculture without water equals an empty dinner plate. Agriculture with water equals a full dinner plate.



In terms of livestock, dairy cows are queens! A typical dairy cow weighs 1,400 pounds and produces 60 pounds of milk or 2.6 pounds of butter or six pounds of cheese per day. A one day's consumption by a cow is 35 gallons of water, 20 pounds of grain and feed and 35 pounds of hay or silage.

More than 24 million American workers (17 percent of the total U.S. work force), process and sell the nation's food and fiber.

Ethanol and biodiesel fuels made from corn, soybeans and other crops are helpful to the environment and promote energy security.

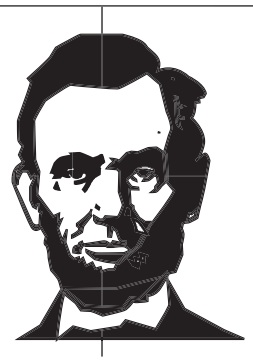
The United States sells more food and fiber to world markets than it imports, creating a positive trade balance.

About 18 percent of all U.S. agricultural products are exported yearly.

It takes only 40 days for most Americans to earn enough income to pay for their food supply for the entire year but 124 days to earn enough to pay federal, state and local taxes for a year.

1858

Mason jars invented for home canning.



1862

President Abraham Lincoln created the first Department of Agriculture.

1865

Pasteurization invented.

1869

Transcontinental Railroad was completed.

1892

First gasoline tractor built by John Froelich.

1914

First federal-state Extension Service established.

1924

Clarence Birdseye invented a method for freezing food.

Newspaper Activities

5 - 5 - 1

Pretend you are a reporter for the Deseret News and have been asked to write a column about the five Fs of agriculture. Choose a catchy headline for your column and remember to include the five Ws of newspaper-style writing: who, what, where, when, why and the one H: how.

UTAH FARM PRODUCTS

Look through the pages of the Deseret News to find advertisements for some important Utah farm products. Clip out each one you find and mount them all on a student-made bulletin board for your classroom or on a poster to display at home. You may also look for the Utah Farm Products logo on items in your local grocery store.

IT'S IN THE FIBER

Make three columns on a piece of paper. Label the columns cotton, wool and other. Look through the Deseret News for words or pictures of items that are made of cotton, wool or other fibers. Clip out the items and paste them in the proper columns.

TREES IN THE NEWS

Make a list of all the products you can think of that come from trees. How many did you think of? Write a letter, for possible publication, to: Deseret News' Kid Scoop Page, P.O. Box 1257, SLC, UT 84110, explaining your feelings about the importance of agroforestry in your life.

FLOWER POWER AND LANDSCAPES

Look through the Home and Business section of the Deseret News classified ads to find as many listings as you can for services available in landscaping or in lawn and yard care. Circle in crayon each one you find. Then rank the top five services that are located closest to where you live. Mark each of those with a star.

CORN BOOM GRAPH

Watch the pages of the Deseret News for graphs, charts and illustrations to help readers understand a certain topic. Draw a bar graph of your own to illustrate the Corn Boom statistics on this page.

CHOOSING GOOD FOODS

Clip pictures and words from the Deseret News of some foods that are good for you. Paste them on a paper plate to make a nutritious meal for your breakfast, lunch or dinner. At least one of the foods must be selected from the "Utah Scramble" on this page. How many of the foods you chose are listed somewhere in "Food, Land and People?"

Utah Scramble

Utah ranks in the top 25 nationally in the production of the following farm and ranch commodities. Unscramble the words in the box below and write the new words on the lines provided.

2nd.	trta rehcresi	__ __ __ __ __ __ __ __ __ __ __
2nd.	kinm	__ __ __ __
3rd.	tosciapr	__ __ __ __ __ __ __ __
5th.	eewts rehcseir	__ __ __ __ __ __ __ __ __ __ __ __
6th.	eepsh and bmlsa	__ __ __ __ __ __ __ __ __ __ __ __ __ __
9th.	psnirg ewtah	__ __ __ __ __ __ __ __ __ __ __
9th.	sprea	__ __ __ __ __
9th.	oonnsi	__ __ __ __ __ __
10th.	eylrab	__ __ __ __ __ __
14th.	tysukre	__ __ __ __ __ __ __
15th.	llffaaa ahy	__ __ __ __ __ __ __ __ __ __
17th.	ydr nbaes	__ __ __ __ __ __ __ __ __
22nd.	ppseal	__ __ __ __ __ __
22nd.	yenoh	__ __ __ __ __

Answers: 2nd, tart cherries; 2nd, mink; 3rd, apricots; 5th, sweet cherries; 6th, sheep and lambs; 9th, spring wheat; 9th pears; 9th, onions; 10th, barley; 14th, turkeys; 15th, alfalfa hay; 17th, dry beans; 22nd, apples; 22nd, honey.

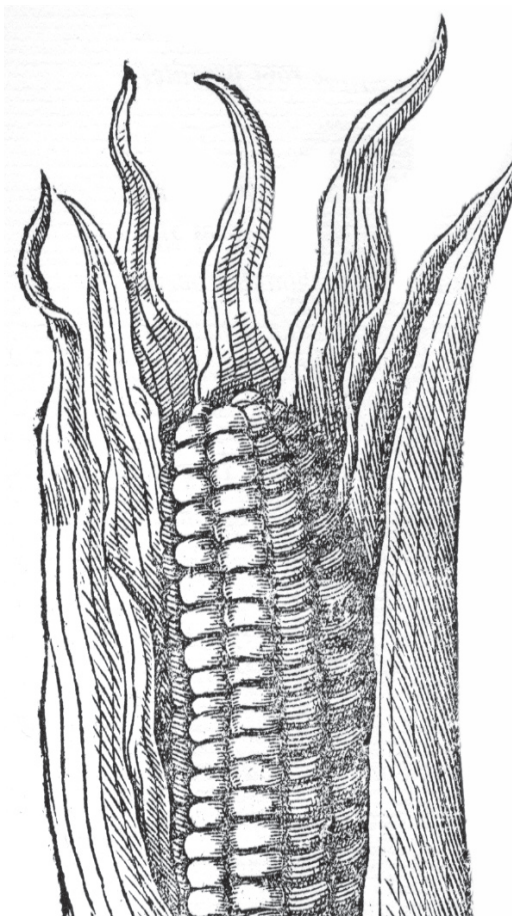
Utah facts

Agriculture is a vital industry to Utah's economy. With 15,000 farms in the state, totaling nearly 11.6 million acres, Utah agriculturists produce crops and livestock worth nearly $1 billion annually.

Productive crops on Utah range land are forage and timber. Much of Utah's range land is not fit for mechanical cultivation. Ranchers allow the land to be "harvested" by animals like cattle that eat the forage. The livestock are then sold to stockers in the midwest who raise the calves, doing the "finishing" that gets the livestock ready for market.

In 1987, only five U.S. newspapers used ink derived from soybeans. Currently, more than 3,000 use it. The colored inks (cyan, magenta and yellow) used to print this educational section and the Deseret News are soyoiled ($1 per lb.). The black ink used is low rub petroleum (45 cents per lb.).

The USDA defines a "farm" as being a unit with a gross sale of $1,000 per year. In that context, there are 15,000 farms in Utah. In terms of commercial farms in Utah, the number would be considerably less - 6,000 farms.



The Corn Boom

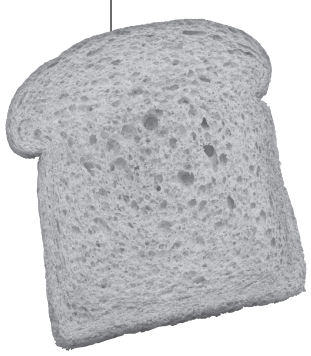
In 1850 about 185 hours of labor were required to produce 100 bushels of corn. Yields were about 40 bushels per acre.

In 1900 about 35-40 hours of labor were required to produce 100 bushels of corn. Yields were still about 40 bushels per acre.

In 1945 about 10-14 hours of labor were required to produce 100 bushels of corn. Yields were 50 bushels per acre.

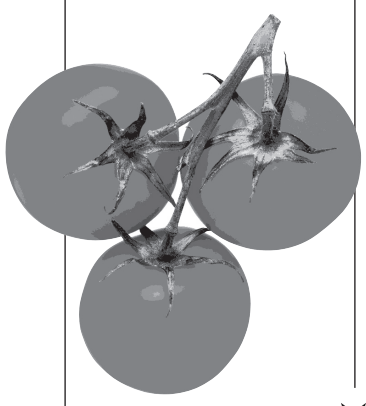
In 1987 about three hours of labor were required to produce 100 bushels of corn. Yields were 120 bushels per acre.

In 2001 about 2 1/2 hours of labor were required to produce 100 bushels of corn. Yields were 136 bushels per acre.



1928

Otto Rohwedder introduced the bread-slicing machine.



1959

Mechanical tomato harvester developed.

1985

Food Security Act passed and Conservation Reserve Program established.

1992

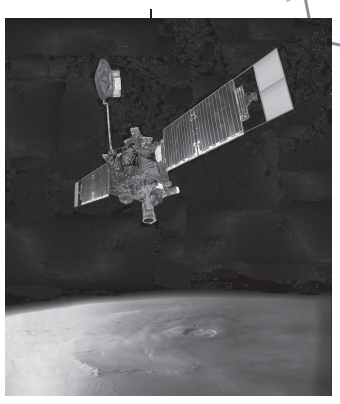
Most farmers using conservation tillage to reduce soil erosion.

1997

Dolly the sheep was the first cloned animal in the U.S.

1998

GIS and GPS come to the farm.



2003

The Bush Administration authorized urgent humanitarian food supplies for the people of Iraq.

FARMERS
MAKE THE BEST PIZZA

When you call to order a pizza for pick up or delivery, you might be quoted a "30-minute wait." But it takes a lot longer than that to supply the pizza restaurant with all the ingredients to make that pizza for you.

Each year, Americans consume nearly 3 billion pizzas! Each American eats an average of 23 pounds of pizza annually. That's 100 acres a day!

It takes more than 30 minutes to pizza

TOMATOES

from seed to sauce

7 months

PIZZA SAUCE

Tomatoes used to make the sauce are an annual crop that is harvested in late summer. The tomatoes grown are a special variety, grown exclusively for sauces. Fresh tomatoes are taken to a cannery where they are cooked, seasoned (with herbs that also take time to grow and harvest), and processed into pizza sauce. The sauce is then delivered to the restaurants.

WHEAT

from seed to harvest

6 months

CRUST

The main ingredient in pizza crust is flour, a product of wheat. Farmers grow and harvest wheat every year. The grain is stored or delivered to a mill, where it is ground up or milled to make a variety of flours. The flour is delivered to a baker who makes the pizza dough, or to distributors who then deliver the flour to the pizza restaurants.

from pig to pepperoni

5 months

SAUSAGE OR PEPPERONI

Sausage, Canadian bacon, pepperoni and ham are pork products. All of these require processing time, in addition to the time it takes to grow and raise pigs.

The next time you order a "30-minute pizza" remember that it really took farmers, processors and delivery folks years to make. So eat and enjoy!

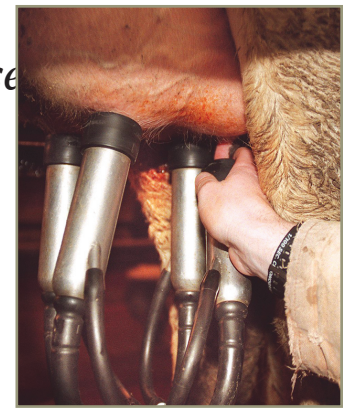
CHEESE

from cow's milk to cheese

3 years

CHEESE TOPPING

The main topping is cheese, mozzarella to be specific. Almost everyone knows cheese is made from milk, and that milk comes from cows, but did you know that it takes 8 pounds of milk to make 1 pound of cheese? A dairy farmer takes care of new calves until they are able to produce their own milk. A cow doesn't produce milk until she has her first calf and is about two years old. Cows are milked twice a day and the milk is kept in a holding tank until a special insulated truck picks up the milk. It is then delivered to a milk plant where it will be processed and made into a variety of dairy products. Cheese is one of them.



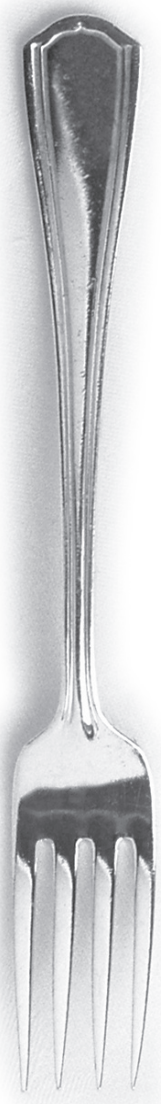
Cherry Concepts

Utah is second only to Michigan in the nation's production of tart cherries. Other states with commercial crops of tart cherries include New York, Washington, Wisconsin, Oregon and Pennsylvania. The amount of tart cherries produced each year varies, depending on such factors as the age of the trees and the weather conditions. The nation's total crop is 275 million to 300 million pounds.

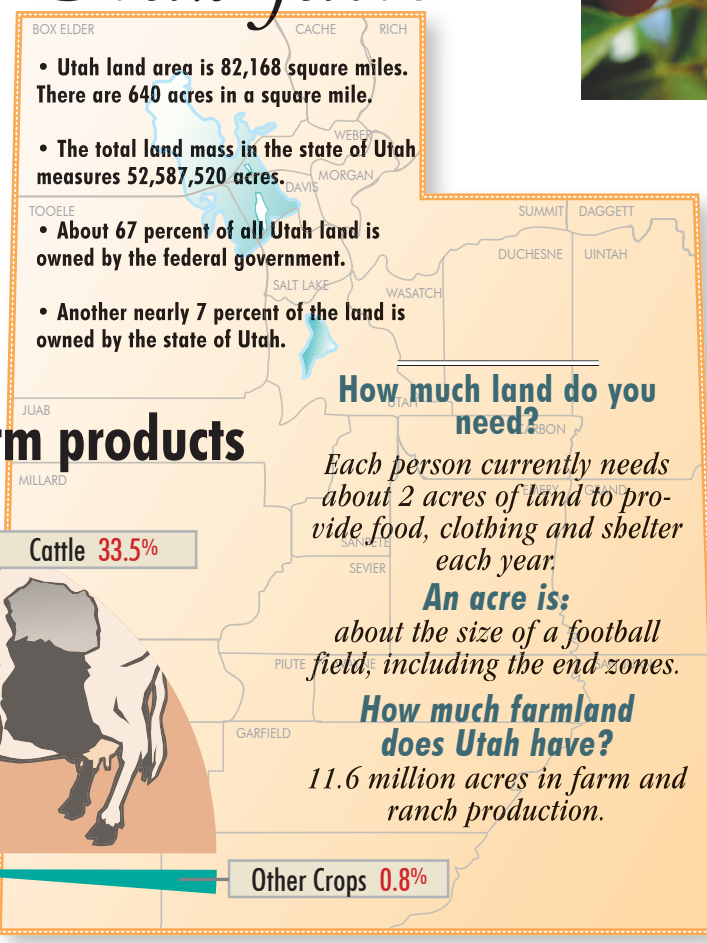
Utah is fifth in the nation's production of sweet cherries. The total production of sweet cherries in the United States is about 370 million pounds. Cherry trees bear fruit for about 25 years, beginning to produce fruit about five years after being planted. A fully mature cherry tree is capable of producing more than 100 pounds of fruit in a season.

Dried tart cherries are a rather new cherry product that are great for snacks, on salads or cereal, used as appetizers or in baked goods. It takes about six to eight pounds of fresh, tart cherries to make a pound of dried cherries. Utahn Phil Rowley learned about drying cherries in 1986 while in California. He succeeded in developing a belt dryer that turned out a high-quality dried, tart cherry. Now Payson Fruit Growers, the co-op he belongs to, dries 15 million to 20 million pounds a year that are sold all over the domestic United States, Japan and Europe.

The montmorency cherry is a tart cherry and is often called the "healing fruit" because cherries contain powerful antioxidants that may help fight cancer and heart disease, according to research at Michigan State University. The average United States citizen consumes about one pound of tart cherries per year.



Utah facts



- **Utah land area is 82,168 square miles. There are 640 acres in a square mile.**
- **The total land mass in the state of Utah measures 52,587,520 acres.**
- **About 67 percent of all Utah land is owned by the federal government.**
- **Another nearly 7 percent of the land is owned by the state of Utah.**

How much land do you need?

Each person currently needs about 2 acres of land to provide food, clothing and shelter each year.

An acre is:

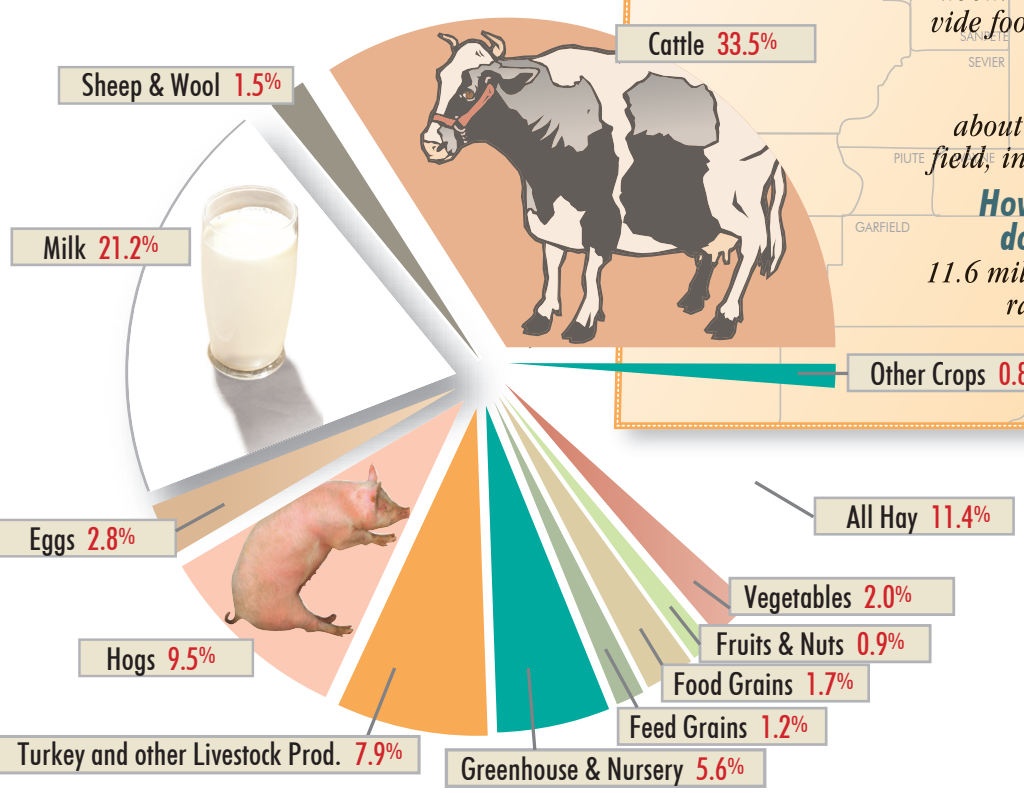
about the size of a football field, including the end zones.

How much farmland does Utah have?

11.6 million acres in farm and ranch production.

Most important Utah farm products

2001



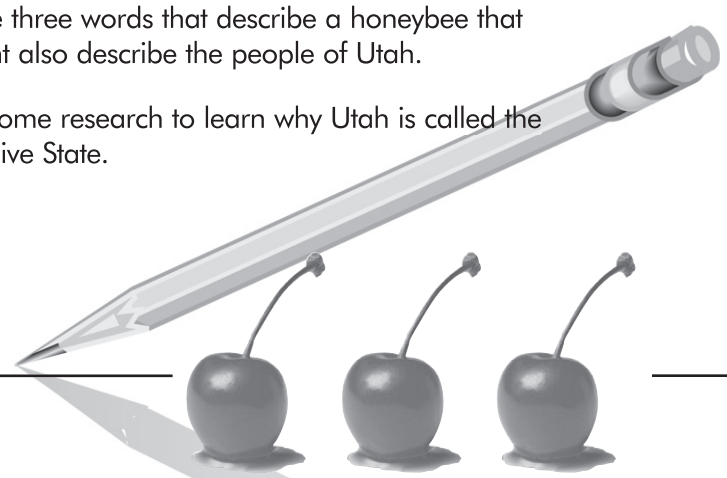
Honeybees

With temperatures warming up, Utah honeybees will be venturing out in search of pollen. Bees see higher colors of the human visible spectrum, plus ultraviolet and they tend to prefer blue, purple and yellow flowers that have a sweet scent. Honeybees are necessary to pollinate a variety of Utah fruits and vegetables.

Honey is the only food consumed by humans that is produced by insects. It is an entirely natural product with neither additives nor preservatives.

Write three words that describe a honeybee that might also describe the people of Utah.

Do some research to learn why Utah is called the Beehive State.



CHERRY CHATTER

1. Holly and her brother, Jake, want to bake two cherry pies so their mom and dad can take one to a party and there would be one pie left at home. The recipe they have calls for 250 tart cherries for each pie. How many cherries will Holly and her brother need for two pies?_____

2. While their pies are in the oven, Holly and Jake decide to have a snack of some of the sweet cherries their mom has in the refrigerator. Jake counts the cherries and then Holly washes them and puts them in a bowl. There are 24 cherries in the bowl. How many cherries will they each get to eat? _____

3. After the pies are through baking and Holly takes them out of the oven, she lets them cool. She and Jake then decide to cut their pie into eight pieces. If she and Jake each have one piece of pie, how many pieces will be left? _____

4. Mom and dad take the other pie to the party. There are five people at the party besides them. If the pie is cut into eight pieces and everyone at the party has a piece, how many pieces will be left to take home? _____

5. With the pieces left from Holly and Jake's pie at home plus the pieces left from mom and dad's pie, how many pieces will be left all together? Is that more or less than a whole pie? How much more or less? _____

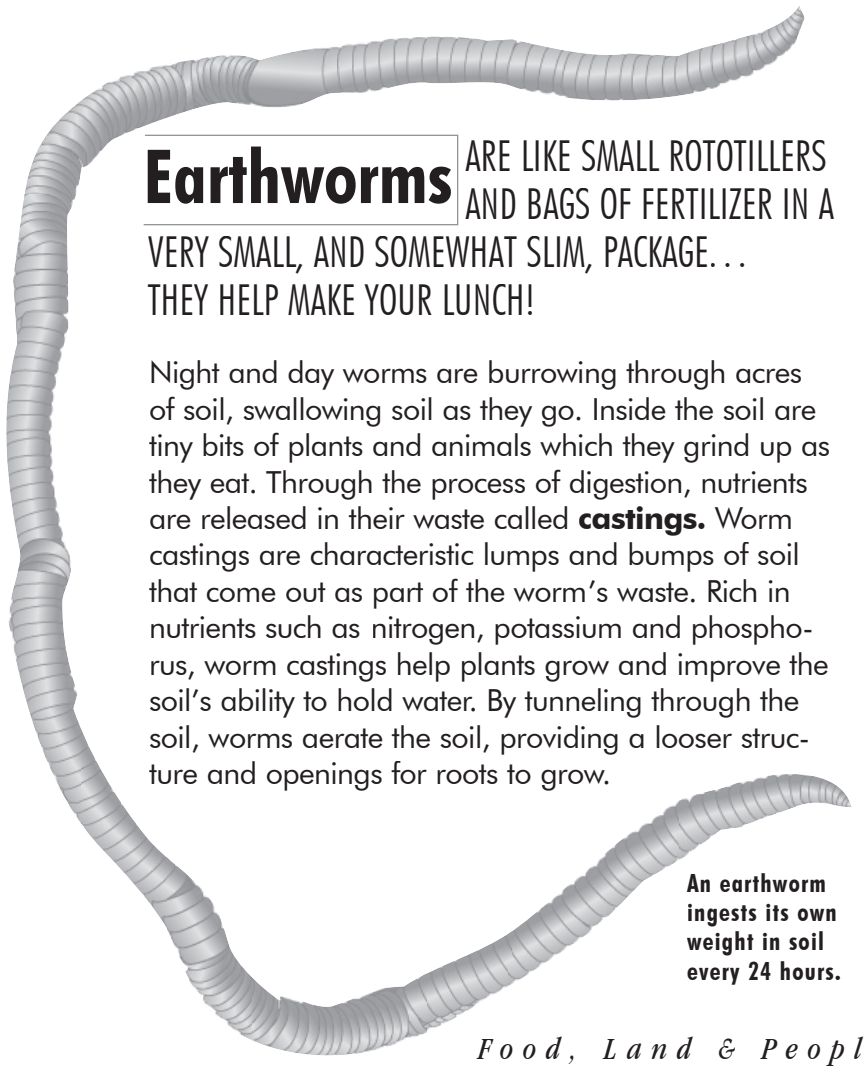
Answers: (1) 500 cherries; (2) 12 cherries; (3) six pieces; (4) one piece; (5) seven pieces; less than a whole pie by one piece.

What is dirt worth?

Dirt isn't worth much unless it is in the right place. Dirt is misplaced soil. It is the stuff under your fingernails, on your socks after a soccer game or what you sweep up off your floor.

Soil is a non-renewable resource that is absolutely necessary for the production of food, shelter, clothing and other necessities we use daily. Soil in the right place is essential to life on this planet. List all the things you get from the soil, and decide how much you think dirt is worth.

Farmers till the soil to make it fine enough so that seeds can be placed in the soil to absorb water, sprout through looser soil, take root easily and knock down the weeds. Tillage causes soil erosion. Farmers have learned the techniques of tillage, and over the past 20 years, soil erosion has decreased by 25 per-



Earthworms

ARE LIKE SMALL ROTOTILLERS AND BAGS OF FERTILIZER IN A VERY SMALL, AND SOMEWHAT SLIM, PACKAGE. . . THEY HELP MAKE YOUR LUNCH!

Night and day worms are burrowing through acres of soil, swallowing soil as they go. Inside the soil are tiny bits of plants and animals which they grind up as they eat. Through the process of digestion, nutrients are released in their waste called **castings.** Worm castings are characteristic lumps and bumps of soil that come out as part of the worm's waste. Rich in nutrients such as nitrogen, potassium and phosphorus, worm castings help plants grow and improve the soil's ability to hold water. By tunneling through the soil, worms aerate the soil, providing a looser structure and openings for roots to grow.

An earthworm ingests its own weight in soil every 24 hours.

farm technology

Safe, abundant food forever

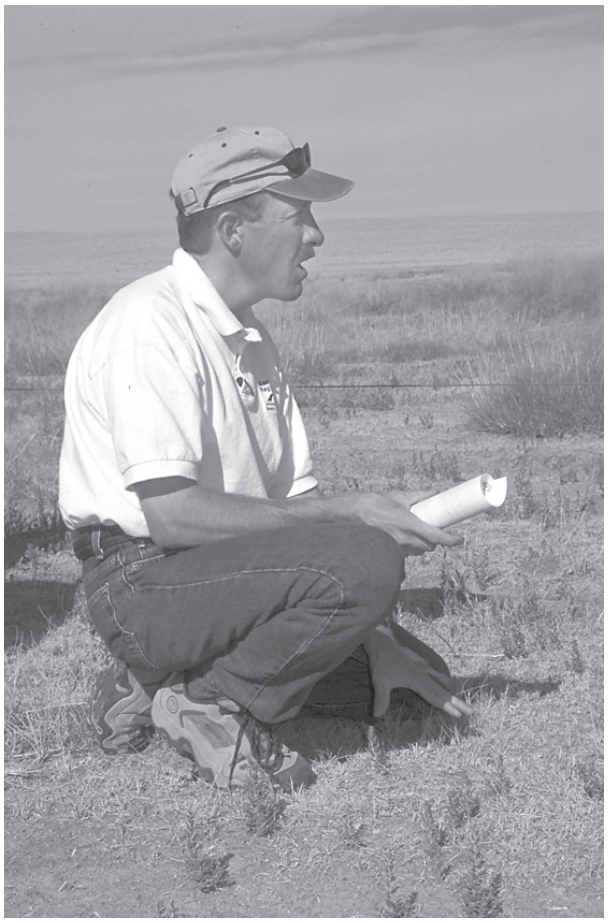
That pasta you had for lunch or dinner last week. Stop and imagine where it came from. Imagine that you could trace that pasta back through the food chain to the farmer who produced the wheat from which it was made.

Would it matter to you how he produced his wheat? Would you hope that he limited his use of pesticides to kill weeds or insects? Would you want him to use his irrigation water carefully? Would you check to see that he didn't apply so much fertilizer that it ran off into rivers or streams or leached into groundwater? Would you be concerned if wind or rain washed away his topsoil?

In short, you'd hope the wheat for your pasta was produced by a farmer who cared about the long-term health of his soil and water, a farmer who wanted to sustain his farm so he and his children could provide Utahns and Americans with safe, nutritious food for generations to come. That very idea drives a nationwide effort called the Sustainable Agriculture Research and Education program, or SARE.

"SARE strives for healthy and profitable farms, a clean environment and strong rural communities in Utah and around the nation," says Phil Rasmussen, director of SARE in the Western region.

"Western SARE provides scientists and agricultural producers in these states and territories with grants to conduct research that can make them more sustainable," says Rasmussen.



Mark Frasier, chairman-elect of the Western SARE Administrative Council, evaluates the health of his rangeland on his cattle ranch in Woodrow, Colo.

PHOTO BY RON DAINES.

the farmer will make extra income from the popped wheat, which will help him sustain his farm and provide consumers with a new healthy snack food.

Rasmussen cites several examples around the West of how farmers and scientists are learning to sustain farms and ranches. In Montana, university scientists are showing how sheep can graze wheat stubble after harvest to reduce insects and weeds, providing the sheep with low-cost feed and helping wheat farmers get rid of the pests without pesticides. In Hawaii, a high school is using a SARE grant to raise crops on its school grounds. The students learn about sustainable farming practices and, at the same time, supply nutritious vegetables for their school lunches. In Wyoming, a rancher is using a SARE grant to raise chickens on his pastures using movable cages, providing a new source of income. In California, a strawberry grower has found that planting broccoli can help reduce diseases in his strawberry crops.

Wes and Jean Roundy used a Western SARE grant to develop, cook, package and market their popped wheat snacks, which evolved from a recipe created by Wes's father, Brooke.

PHOTO BY RON DAINES.

In all, says Rasmussen, Western SARE has provided more than $20 million for more than 600 projects like these throughout the region.

He explains that sustaining a farm or ranch isn't much different from sustaining your body. Eating too much pizza and ice cream will fatten you up, slow you down and give you heart disease. So it is with farming. Too much fertilizer, water or pesticides can harm the soil, the water and the environment. But feeding crops and animals the right foods in the right amounts can sustain the land and the water that farming depends on.

Computers and modern technology are helping America's farmers and ranchers produce more and better food and fiber for Americans to use and to be exported to other countries.

Computer access on farms today	**55%**
Computer use by young farmer s	**87%**
Internet access on U.S. farms	**43%**
Internet access by young farmers	**77%**
Cell phone use by young farmers/rancher s	**85%**
Use of GPS technology	**14%**

Why is it important for a farmer to use sustainable agricultural practices?

YOU BE THE FARMER

Pretend you are a Utah farmer. Decide on a good name for your farm. Use large letters that you have clipped from the headlines in the Deseret News to spell out the name of your farm. Paste the letters on the top of a piece of construction paper. Now clip out pictures or names of things you will grow on your farm. Paste them on your paper and write at least 3 sentences explaining why you chose what you did. Then draw a picture of what your farm will look like.

Western Region Sustainable Agriculture Research and Education

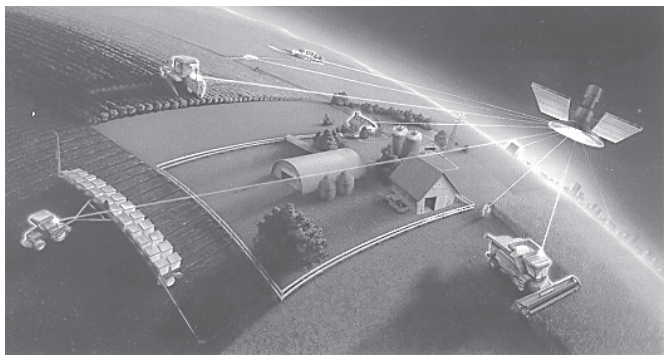
UTAH STATE UNIVERSITY

NASA Program

Growing space

Farming from above

Picture a farmer driving across a Box Elder County wheat field on a tractor that "talks" with satellites orbiting the Earth. The satellites are beaming signals to a GPS tracking device that pinpoints the farmer's exact location. Another device reads electronic maps showing the quality of the soil across the field. Linked electronically, the GPS tracking device and maps tell equipment behind the tractor how much fertilizer to apply or how much seed to sow, depending on the soil's quality at each location.



COURTESY DEERE & COMPANY

Darvel Garn with a computer-generated map showing yield variations from his wheat fields.

Across the fence, above the farmer's wheat field, a small airplane flies over, taking pictures with an infrared camera that sends electronic images via satellite to the Internet. That evening, the farmer logs onto the Internet and downloads those same pictures. Their mosaic of colors, light and dark, tells him that some parts of the field are thriving, while others are weak and need more nutrition to help them grow. Some colors even show patches of weeds.

As you can see, it's no longer your grandpa's farm. Today's farmers are looking down from the sky to farm their precious ground below.

"It's a whole new world up there," says Phil Rasmussen, an extension soil scientist at Utah State University. "Photographic and sensing devices in satellites and airplanes are becoming the farmers' eyes, helping them bring healthier food to our dinner plates."

As America's first NASA extension specialist, Rasmussen is teaching farmers in Utah and around the nation how to bring space technology down to earth to fight weeds and insects and put fertilizer and pesticides where they belong. Rasmussen is working with Bruce Bugbee, a USU soil scientist whose wheat experiments have traveled on the space shuttle with the idea of someday feeding astronauts in space.

Here on Earth, an example of Rasmussen and Bugbee's work involves a wheat farmer who purchased a satellite image of his 200-acre field for $100. The image provides an accurate view of the entire field, down to a 4-meter resolution, which will allow the farmer to create maps for fertilizer applications, wheat yields and profits. For example, if the satellite image shows that wheat in parts of the field is growing poorly, he can employ GPS and his variable-rate applicator to increase fertilizer in those areas. That, in turn, could increase yields and the quality of the wheat he harvests, providing the farmer with more money and consumers with a better product. What's more, by applying the right amount of fertilizer in the right places, he prevents the fertilizer from running off fields and polluting rivers or underground water.

In the past, the expense of these tools of technology prevented many farmers from buying and using them, but their costs are falling, and so is their size. For little more than $500, farmers can buy portable technology that fits into a pocket and allows them to download satellite images, keep their books, create fertilizer application maps, estimate crop yields and call home to see what's for dinner.

Maybe the next time you see a tractor crossing a field it won't even have a driver. The farmer will be at home in his office farming with the computer and letting GPS guide his equipment.

Darvel Garn harvests wheat in Box Elder County using GPS equipment attached to his combine.

Newspaper Activities

TAKE A STAND

After you have read all about "farming from above," decide what your own personal feelings are about farmers and how they can use new technology and the Global Positioning System (GPS). Take a stand and write a letter to the editor of the Deseret News, explaining how you feel and why. Mail in your letter for possible publication to: Deseret News Editorials, P.O. Box 1257, SLC, UT 84110.

COMIC CAPERS

Choose one of the five Fs of agriculture and draw a comic strip about it. Your strip must have at least four characters in it, and it must be at least three frames (boxes) in length. Send in for possible publication to: Deseret News Kid Scoop Page, P.O. Box 1257, SLC, UT 84110.

DRAW AN AD

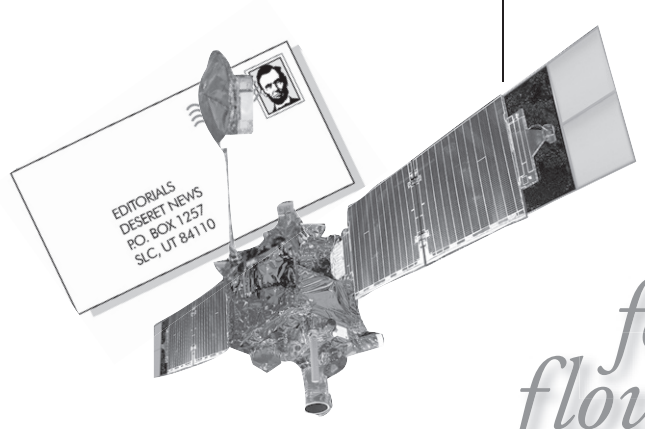
Select a favorite food mentioned in "Food, Land and People." Look at some of the display (picture) ads in the Deseret News to see how they are drawn. Now draw a display ad for the food you chose. Color it nicely and share it with your classmates or your family.

JOB HUNT

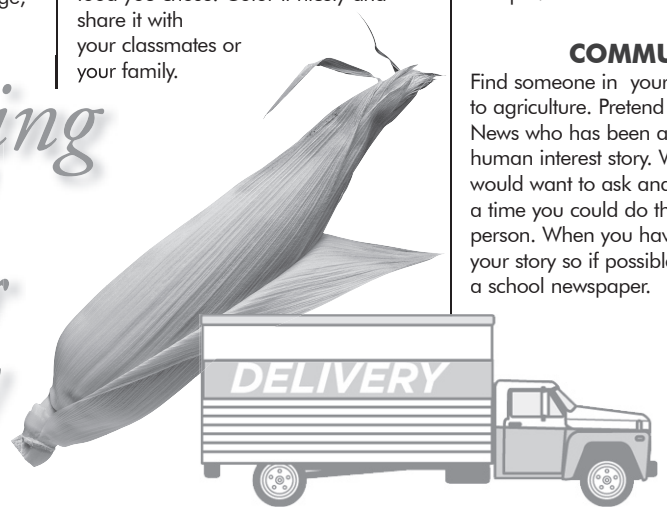
If you are a student, locate the classified ad section of the Deseret News. Search for jobs that are related to agriculture. Find a good job that you think your teacher could do in the summer months or when your class is off track. Tell why you think your teacher would be good at that job.

COMMUNITY WORKERS

Find someone in your community who has a job related to agriculture. Pretend you are a reporter for the Deseret News who has been asked to interview this person for a human interest story. Write down a list of questions you would want to ask and then call or write the person for a time you could do the interview over the phone or in person. When you have completed your interview, write your story so if possible, it could be included in a class or a school newspaper.



farming
food
fiber
forestry
flowers



Credits

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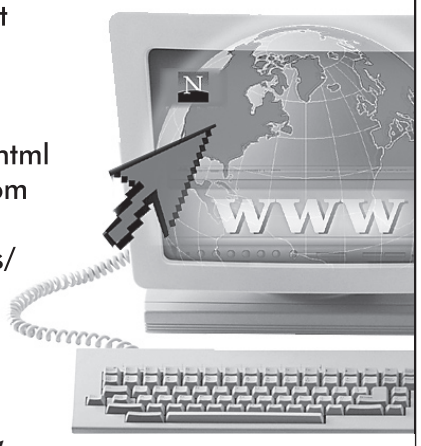
Resources

Utah Agriculture in the Classroom, Utah State University Extension; "Utah Department of Agriculture and Food Annual Report", "Farm Facts," American Farm Bureau Federation Public Relations Team: Utah Farm Bureau Federation; United States Department of Agriculture; Cherry Marketing Institute, Lansing, MI.

Web Sites

www.agclassroom.org/ut
www.usda.gov
www.ers.usda.gov
www.usda.gov/nass/
www.usda.gov/services.html
www.southridgefarms.com
www.usacherries.com
http://agrc.its.state.ut.us/
www.acga.org
www.surweb.org

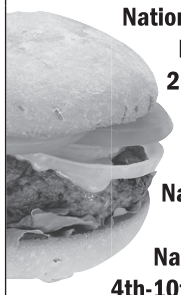


2003

holidays & celebrations

AGRICULTURE-STYLE!

Mark these special days on your calendar and think of ways to have a happy celebration with the months, weeks and days of your favorite holidays.



APRIL

National Lawn and Garden Month
National Pecan Month
25th: National Arbor Day

MAY

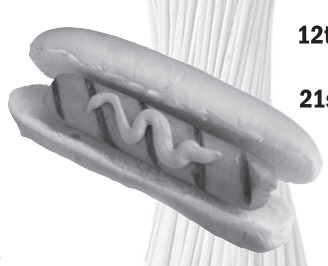
National Barbecue Month
National Egg Month
National Hamburger Month
4th-10th: National Wildflower Week
16th-26th: International Pickle Week

JUNE

Turkey Lovers Month
17th: National Eat Your Vegetables Day
22nd-28th: National Cheese Week

JULY

National Baked Bean Month
National Blueberry Month
National Hot Dog Month
20th: National Ice Cream Day



AUGUST

2nd: National Mustard Day

SEPTEMBER

National Biscuit Month
National Chicken Month
National Honey Month
National Mushroom Month
National Potato Month
National Rice Month
24th: National Food Service Employees' Day

OCTOBER

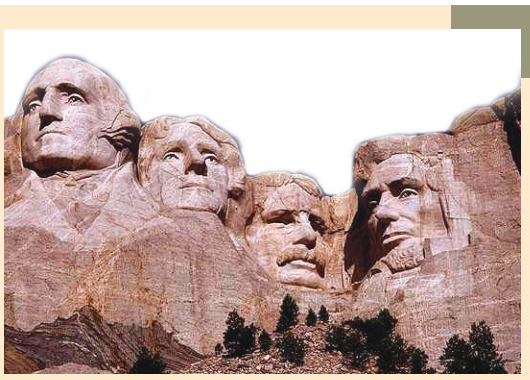
National Popcorn Poppin' Month
National Pork Month
16th: World Food Day
19th-25th: National Forest Products Week

NOVEMBER

Peanut Butter Lovers Month
12th: National Pizza With Everything Day
17th: Homemade Bread Day
21st-27th: National Farm and City Week

DECEMBER

1st-7th: Cookie Cutter Week
1st: National Eat a Red Apple Day



Famous Presidential Quotes

GEORGE WASHINGTON

"I know of no pursuit in life in which more real and important services can be rendered to any country than by improving its agriculture, its breed of useful animals, and other branches of a husbandman's care."

THOMAS JEFFERSON

"Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most wedded to its liberty and interests, by the most lasting bonds."

ABRAHAM LINCOLN

"Every man is proud of what he does well.....his heart is in his work and he will do twice as much of it with less fatigue....The man who produces a good, full crop will scarcely ever let any part of it go to waste. He will gather it in due season and store it in perfect security."

THEODORE ROOSEVELT

"The fundamental idea of forestry is the perpetuation of forests by use. Forest protection is not an end of itself, it is a means to increase and sustain the resources of our country and the industries which depend on them. We have to see clearly that whatever destroys the forest, except to make way for agriculture, threatens our well-being."

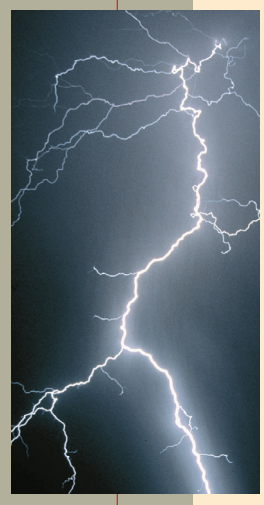
COLD HARD FACT

This Winter's Snow is Next Summer's Ice Cream

Ice cream isn't made out of snow and snow isn't made out of milk. But there is a relationship between the two. Let's trace ice cream back to snow! Snow and rain are very important to farmers and ranchers. A dry year can be a disaster for crops and livestock. Too much snow and rain can also be troublesome to folks who work on the land. Flooding destroys crops, causes soil loss or erosion, creates livestock health problems and causes damage to buildings.

Farming and ranching are risky business. People can't control the weather but they can learn about the seasons, weather patterns or climate and how nature helps people produce things we use from the land.

So how does snow this year make next year's ice cream? This winter's snow becomes next year's water for irrigation, which waters crops, like hay. The hay is fed to dairy cows that in turn produce milk, which is made into ice cream for you to enjoy!



Utah Agriculture in the Classroom
Utah State University Extension

MISSION STATEMENT

The mission statement of Utah Agriculture in the Classroom is to increase agricultural literacy in Utah by developing a program that increases student awareness about agriculture and instills in students an appreciation for our food and fiber system.

Want to learn more?

Contact Agriculture in the Classroom 435-797-1657, or visit our web site at www.agclassroom.org/ut for more information.

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