

AG IN THE CLASSROOM - HELPING THE NEXT GENERATION UNDERSTAND THEIR CONNECTION TO AGRICULTURE

# How Agriculture Contributes to Colorado

What is agriculture and how does it affect me? Agriculture means raising crops and livestock – and it affects your life everyday. Not only does agriculture put food on your table, but farmers and ranchers help create products used in all areas of your life. They keep our state moving and growing with materials used in transportation and construction. Agricultural products help keep people healthy and beautiful. Products like medicine, x-ray film, soap, cosmetics and shaving cream are made with farm products. Farmers and ranchers put clothes on your body, shoes on your feet and footballs on the field. Agriculture is important in all of our lives.

Like many states, agriculture contributes a great deal to our state. Did you know that there are 30,500 farms and ranches in Colorado? The land occupied by farms and ranches is 30.7 million acres. That's nearly half of the state's total land area. Wow!

Agricultural businesses provide more than 105,000 jobs in our state. These businesses contribute \$16,000,000,000 (that's a lot of zeros) or \$16 billion to Colorado's economy each year.

Our state's number one agricultural

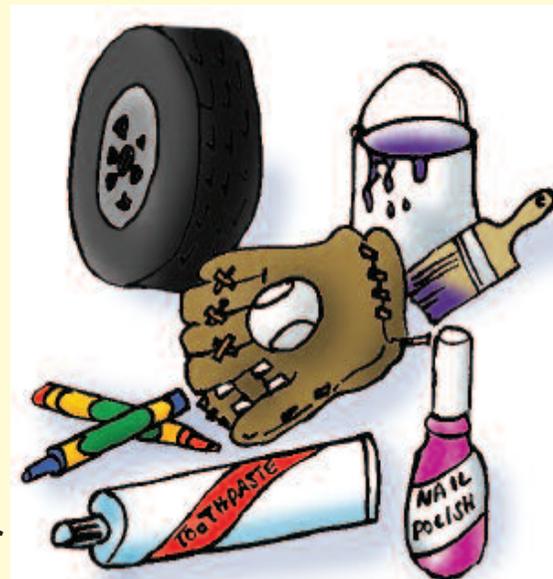
commodity, or product, is cattle and calves. There are 2.6 million head of cattle in the state. Compare that with 4.5 million people. That means, there is one cow for every two people in Colorado! Almost 3/4 (or \$5.4 billion) of the money earned in

Colorado by agriculture comes from selling livestock. Cattle aren't the only livestock that are big in our state. Colorado ranks fourth in the nation in sheep and lamb totals. Same is true of wool production.  
*continued on page 4*

## Agriculture is Part of Your Life

Products we use in our everyday lives come from plant and animals produced by America's farmers and ranchers:

- **Health care:** pharmaceuticals, surgical sutures, ointments, latex gloves, x-ray film, gelatin for capsules and heart valves.
- **Construction:** lumber, paints, brushes, tar paper, dry wall and tool handles.
- **Transportation:** fuel, lubricants, antifreeze, tires and upholstery.
- **Manufacturing:** adhesives, solvents and detergents.
- **Printing:** paper, ink and film.
- **Personal Care Products:** shampoo, cosmetics, lotions, finger nail polish and toothpaste.
- **Education:** crayons, textbooks, chalk, desks, pencils and paper.
- **Sports:** uniforms, baseball bats, leather equipment and shoes.



# A Brief History of

Native Americans such as the Anasazi, Apache, Arapahoe, Cheyenne, Shoshoni and Ute Indians were the first people to live in Colorado. They were our first farmers and ranchers. In the 1500s through the early 1800s, various explorers from Spain and France criss-crossed the state looking for gold and silver.

Indian attacks reached their highest level and food became scarce. Because of the shortages, prices became high. Potatoes cost \$15 a bushel and flour cost \$40 per 100 pounds. These prices were very high at the time. More agricultural settlements were built throughout the South Platte Valley.

Gold was discovered in Denver. With the discovery, came many people seeking their fortune. With the population growing, the need for local food grew too. Mason jars for home canning were invented.

The first permanent settlement in Colorado was San Luis, Colorado.

Dry land farming, or farming without irrigation water, spread throughout eastern Colorado.

Greeley completed its 900,000 acre irrigation project.

Construction of the Colorado six mile Gunnison water tunnel nation with It was 2,790,000 acres of land irrigated. Fort Collins builds a sugar beet refinery. 4 years later.



1830 1851 1858 1865 1872 1880 1888 1902 1905 1909

1837 Steel plows and practical threshing machine patented.

1837 The first irrigation ditch was dug in San Luis to provide farmers with the water they needed to grow crops.

1852 Self-governing windmill perfected.

1854 The Homestead Act gave each farmer 160 acres of ground so they could start small independent farms. Change from hand power to horses 1862-1875 created 1st agricultural revolution

1862 The arrival of the railroad brought more miners and other people to Colorado. This same year, a settlement in Greeley was established and the first irrigation canal was surveyed there. Steam tractors were tried out. Silos for storing grain and deep-well drilling for water began to be used.

1862 Colorado became the 38th state. Barb wire was invented.

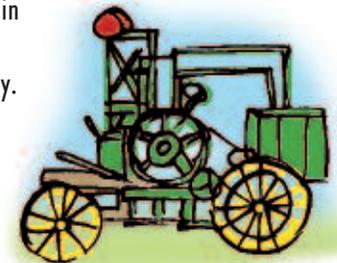
1876 Denver Union Stockyards were founded. They later became the largest receiving market for sheep in the country.

1886 First gasoline tractor was built.

1892 The first sugar beet refinery is built in Grand Junction.

1899 Uncompahgre irrigation project is started.

1903 60 head of cattle and horses, a few sheep and hogs are shown at the first National Western Stock Show in Denver



Oxen and horses pulled wooden plows, all planting was done by hand in the 1700s and early 1800s. In 1793 the cotton gin was invented. In 1810-1825 the U.S. food canning industry was started. Fur trappers and mountain men set up trading posts in 1825.

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Written, Illustrated and Designed by Carrie Jordan, Edited by Bette Blinde

# Colorado Agriculture

Prices of food and farm land increase because of the end of World War I.

1919

The Dust Bowl was a time of severe drought and duststorms.

This occurred in many parts of the United States including Colorado.

1930s

The Taylor Grazing Act became law, allowing ranchers to use public lands for grazing.

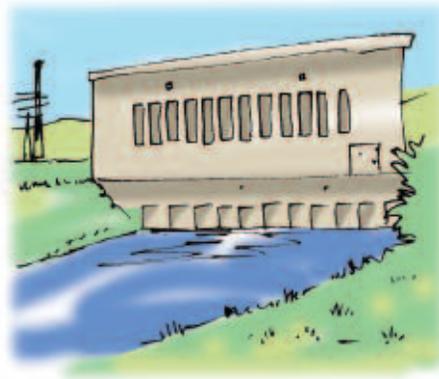
1934

The change from using horses to tractors made up the 2nd agricultural revolution. Also, there were new varieties of crops available, new pesticides (weedkillers) and irrigation techniques.

1945-1970

Colorado-Big Thompson Project completed—providing irrigation water to 720,000 acres of land in northeastern Colorado.

1947



Initial work on The Frying Pan-Arkansas Project is completed, transferring water across the state.

1975

The Frying Pan-Arkansas Project is completed providing water for irrigation of 280,600 acres of farm ground.

1985

Farmers begin using satellite technology to track and plan farming practices.

1994

1918 1920-1933

Agricultural production increased sharply to help supply the needs of soldiers in World War I. Dry lands were farmed to produce wheat. Great Depression happens—prices go down and many farmers lose their land and jobs.

1935

Soil Conservation, including crop rotation and adding soil nutrients became more widespread. In addition, contour plowing was used. This means plowing in terraces or steps on sloping land to help prevent erosion. Shelter belts of trees or planting rows of trees to stop the wind from blowing also helped.

1941

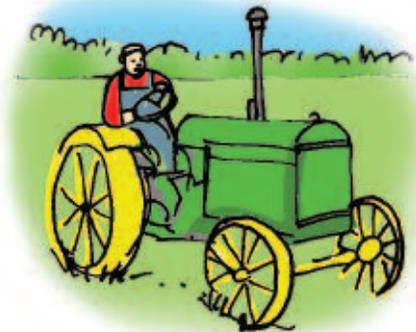
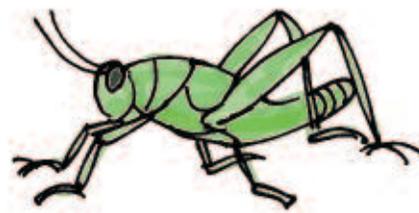
Frozen food became popular. America enters World War II bringing an end to the Great Depression. American farmers carried the load of feeding much of the world.

1940s

Some farmers received electricity on their farms. Crop reports, weather and market reports on the radio became more available.

1958

Colorado suffers from a grasshopper plague that causes major problems for farmers.

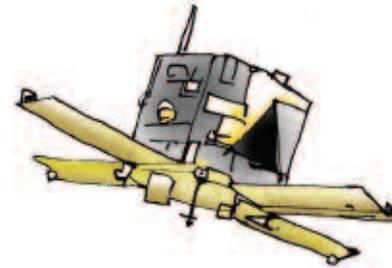


1990s

Information technology and precision techniques such as GPS were used more and more in agriculture.

1997

The first weed and insect resistant biotech crops (soybeans and cotton) are grown.



And we haven't even talked about crops in the field yet! Colorado ranks first in the nation in the production of proso millet, a grain which is used as bird seed and cattle feed. Then there are the vegetable and fruit crops. Our

lettuce production is third in the nation. Our sunflower and potato production ranks fourth. Colorado's leading fruit crops are apples, peaches and pears.

In 2005, Colorado's 104,000 milk cows produced more than 2.3 billion

pounds of milk. Our chickens lay more than a billion eggs every year. Then there are the 40 fish farmers and 26,000 bee colonies in the state. There's no doubt about it, agriculture is big in Colorado.

# The Future of Colorado Agriculture

The people of Colorado have a historical link to agriculture. The growth of cities, lack of water and other challenges threaten the connection between Coloradoans and their farming and ranching heritage.

The population (or number of people) is growing faster in the Front Range of Colorado than the rest of the United States. Population is expected to increase an additional 63% by 2030. As the population grows, farm land is lost and changed to land used for homes and businesses. In the last several years, 1.2 million acres of agricultural land was converted. This acreage is equal to an area 17 miles wide and 109 miles long (about the distance from Denver to Pueblo.)

To keep up with population growth, between now and 2050, the world must produce as much food as it has in the past 12,000 years. That's millions and millions of tons of food!

Protecting Colorado's agricultural land and water is important. Food and fiber production, protection of our open spaces and wildlife habitat effects all of us. In addition, keeping our agricultural businesses strong is important for maintaining jobs and our economy.

## Colorado Content Standards

This issue of the Colorado Readers helps you achieve the following Colorado Content Standards.

### ECONOMICS

**Standard I** - Students understand that because of the condition of scarcity, decisions must be made about the use of scarce resources.

**Standard II** - Students understand how different economic systems impact decisions about the use of resources and the production and distribution of goods and services.

**Standard III** - Students understand the results of trade, exchange, and interdependence among individuals, households, businesses, governments, and societies.

### HISTORY

**Standard I** - Students understand the chronological organization of history and know how to organize events and people into major eras to identify and explain historical relationships.

**Standard III** - Students understand that societies are diverse and change over time.

**Standard IV** - Students understand how science, technology, and economic activity have developed, changed, and affected societies throughout history.

### MATHEMATICS

**Standard I** - Students will utilize language, symbolism, and technology to develop number sense and to communicate those mathematical ideas.

### READING AND WRITING

**Standard I** - Students read, listen to, and understand a variety of materials.

**Standard IV** - Students apply thinking skills to their reading, writing, speaking, listening, and viewing.

## WORD SCRAMBLE

Unscramble the following letters to create words found on pages 1 and 4 of this reader.

t a p t o o \_\_\_\_\_

n o p u l a t i p o \_\_\_\_\_

w e s l o n r u f \_\_\_\_\_

l o w o \_\_\_\_\_

s r e c r a h n \_\_\_\_\_

m e n y o c o \_\_\_\_\_

k i l m \_\_\_\_\_

b e r i f \_\_\_\_\_

g u t a r e l u r i c \_\_\_\_\_

g e s g \_\_\_\_\_

r p c o s \_\_\_\_\_

t o c s l k i e v \_\_\_\_\_

s a r f r e m \_\_\_\_\_

l t a c e t \_\_\_\_\_

l e m t i l \_\_\_\_\_

u l e c t e t \_\_\_\_\_

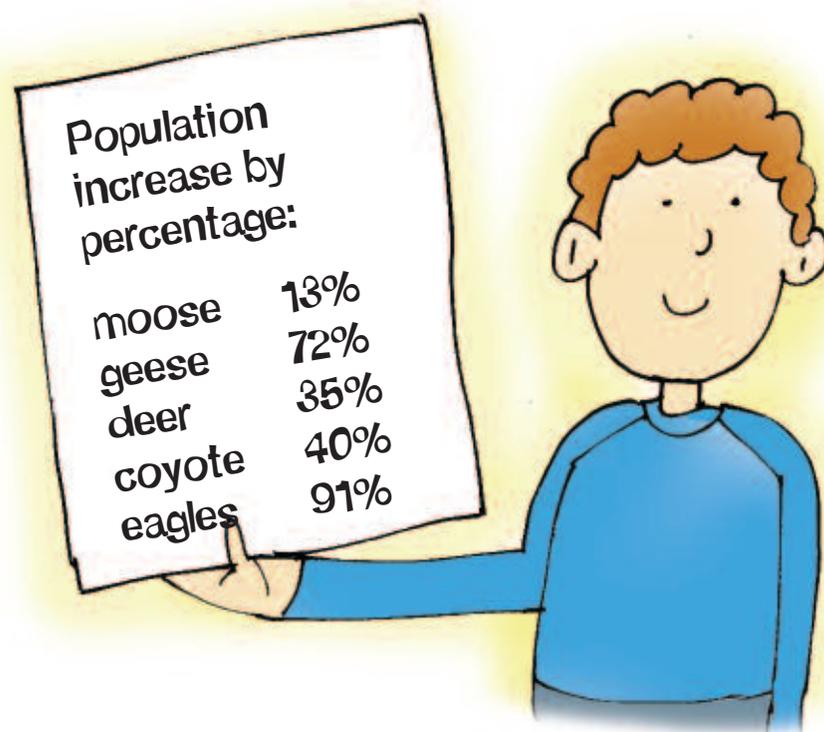
# Colorado and the World Economy

Economy is the management of resources and money. So how does Colorado agriculture fit in with the world economy? Canada is Colorado's top international trade market. Agriculture in Colorado provides nearly \$1 billion in exports each year to countries including Canada, Mexico, Japan, Taiwan, Korea and many more. Companies sell agricultural products from grain to frozen food to people around the world.

Experts from countries such as Afghanistan come to Colorado to learn as much as they can. Then they go back home and improve their agricultural systems. Other countries such as Argentina and Chile are working with scientists in Colorado to learn how to manage water resources and improve their environment.

It really is a small world and Colorado is doing its part to help our fellow human beings in many parts of the world.

David needs to graph the following information for a school report on wildlife. Help him out by drawing the bars on his graph for him.



Which animal has shown the greatest population increase? \_\_\_\_\_

## FUN FACTS:

- Farmers and ranchers provide food and habitat for 75% of the nations wildlife. Deer, moose, fowl and other animals have shown population increases in the past several years.
- Ethanol and new fuels made from corn, soybeans and other grains are beneficial to the environment and help contribute to energy independence for the U.S.

# Colorado Vegetables & Fruits

Colorado's largest vegetable crop is potatoes, grown in both the San Luis Valley and northeastern plains.

Colorado's potato industry includes our summer potato harvest (second largest in the nation) and our fall crop (fifth largest in the nation). Also important to our potato industry is the seed potato industry. Located in the San Luis Valley, Colorado's seed potato research and production are recognized around the world.

Onions are Colorado's second largest vegetable crop. Our dry climate helps farmers grow high-quality onions. Our state is known for its storage onions that are allowed to air cure at harvest. Because they can be stored for months, Colorado onions supply America and export markets from July to April.

Colorado's dry beans are our third largest vegetable crop. Pinto and kidney beans are harvested in the fall

and sold year-round. Carrots are ranked fourth, followed by cabbage and sweet corn. Sweet corn seed production is a growing industry in Colorado. Using the latest in plant-breeding technology, Colorado farmers are in the lead in the vegetable industry. Spinach, lettuce and cucumbers finish up our top vegetable crops.

Colorado's fruit production is primarily located in Delta, Mesa and Montrose counties. The season begins in mid-June when cherries are harvested. Each fall customers throughout the U.S. look forward to the harvest of our peaches, apples, cherries, plums and apricots.

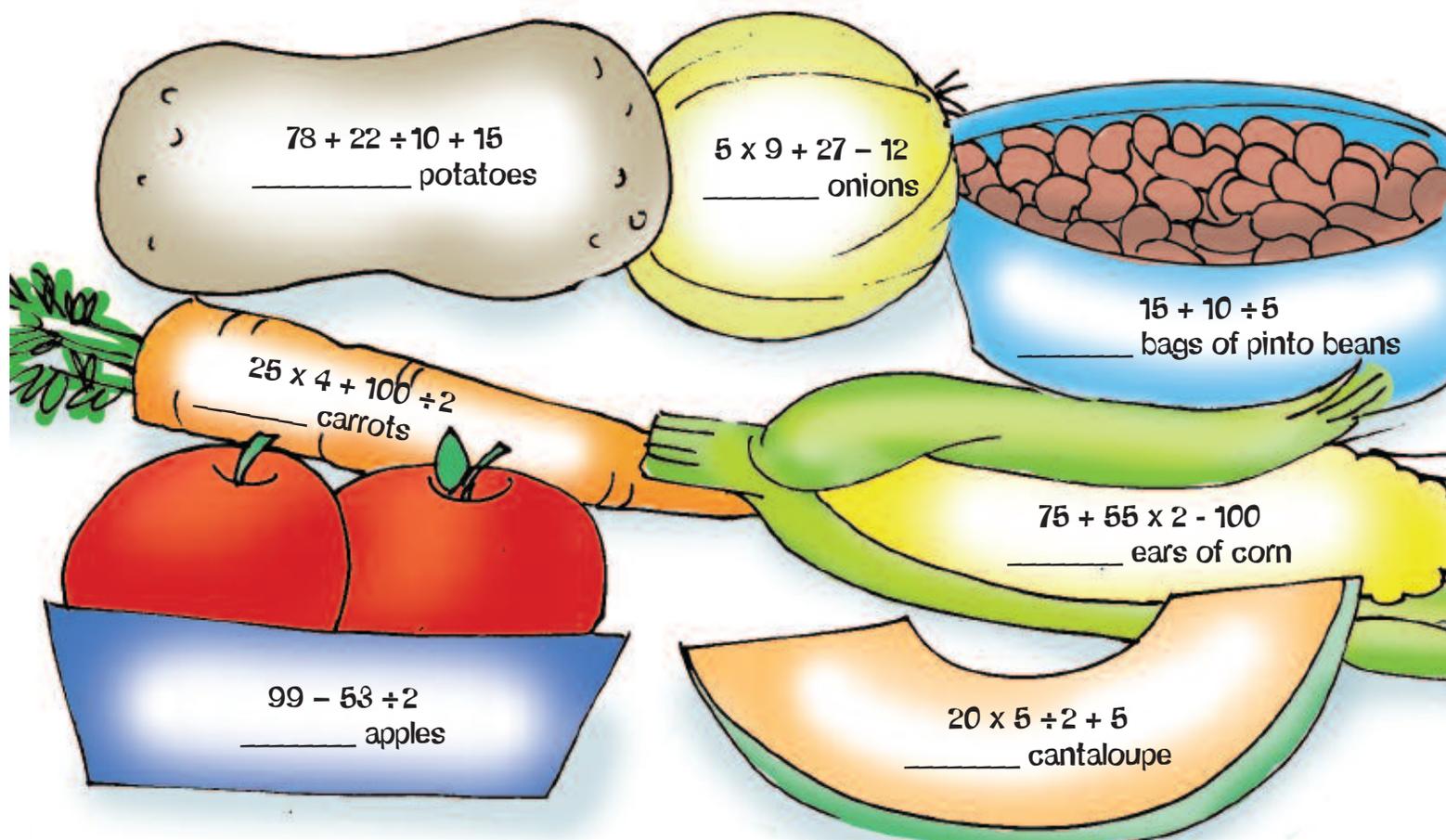
Apples are Colorado's largest fruit crop. Colorado's high-quality apple production is centered on the state's Western Slope. Major varieties include Red Delicious, Golden Delicious, Jonathan, Gala, Fuji and Rome apples. Colorado Golden apples were the first

of their kind. They are golden with a slight reddish blush. This quality, along with their unique flavor, makes them the most outstanding Golden Delicious apples in the nation. The Colorado difference is easily noted in the taste! Colorado apples are also available as Colorado Supreme apples, which are graded to a standard higher than the USDA #1 grade, representing the highest quality of apple available.

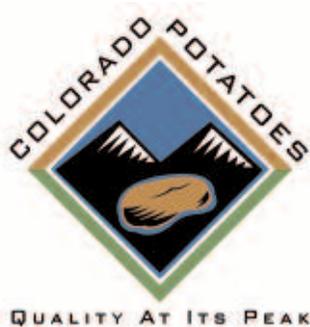
Colorado's melon production is centered in the Arkansas Valley around a town named Rocky Ford. This area is famous for its cantaloupe melons. People throughout the U.S. ask for Rocky Ford melons. This same region produces watermelon for the market as well as cantaloupe and watermelon seeds, which are now shipped worldwide.

*Adapted from the State of Colorado Department of Agriculture website  
<http://www.ag.state.co.us/mkt/brochures/produce.html>*

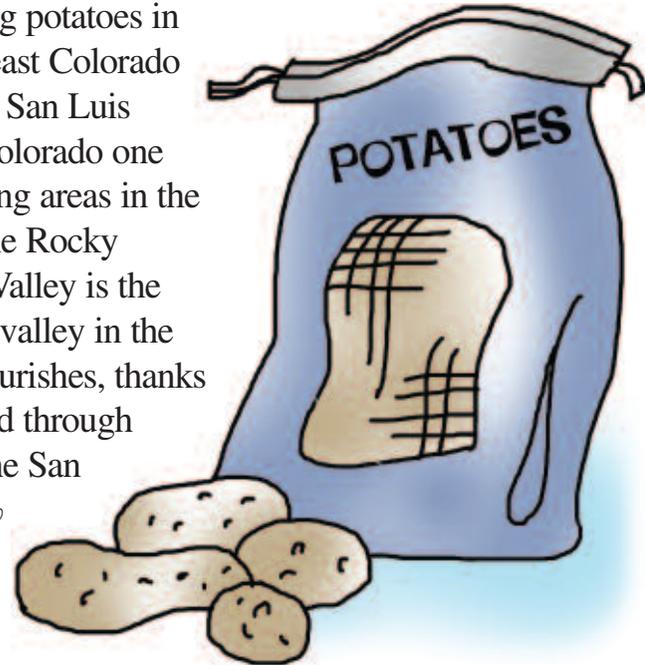
**Help farmer Suzie figure out how many fruits and vegetables she sold at the farmer's market over the weekend. Write each answer on the line below the problem.**



# Colorado Is Proud of Its Potatoes!



Farmers began growing potatoes in the Greeley area of northeast Colorado in 1870 and in Colorado's San Luis Valley in 1875, making Colorado one of the oldest potato growing areas in the country. Surrounded by the Rocky Mountains, the San Luis Valley is the highest and largest alpine valley in the world. Here the potato flourishes, thanks to irrigation water supplied through center pivot sprinklers. The San Luis Valley produces 92% of Colorado's potatoes today with the rest grown in northeastern Colorado.



Most Americans love potatoes - mashed, roasted, fried or baked. And rightly so, as the potato is a nutritional powerhouse, loaded with fiber and essential vitamins and minerals.

One medium-sized, 5.3 ounce potato is:

- Fat-free and sodium-free – only 100 calories
- A great source of vitamin C
- An excellent source of potassium when eaten with the skin – more potassium than bananas
- Less than 10 percent of the daily value of carbohydrates
- A good source of fiber when eaten with the skin
- Americans eat about 125 pounds of potatoes a year, about half from fresh potatoes and half in processed foods.

*From the Agriculture Council of America ([www.agday.org](http://www.agday.org))*

Colorado is ranked in the top five potato producing areas nationally, both in acres planted and production.

The Incas in Peru were probably the first to grow potatoes in about 200 B.C. In the late 1400s and early 1500s, Spanish Conquistadors exploring the New World found Indians in South America feasting on the potato. They didn't find gold, so they took potato samples home. In Europe, people avoided the potato for years because it was from the same family as the deadly night shade plant. But before the end of the sixteenth century families of Basque sailors began to grow potatoes in Northern Spain.

Sir Walter Raleigh changed the potato's path in the early 16th century when he began growing 40,000 acres of the plant in Ireland. Over the years potatoes became a major food source in Switzerland, France, and Ireland. In 1845-46 late blight, a fungus, destroyed the potato crop leading to the disaster of the Irish Potato Famine. More than one million people died and two million emigrated away from Ireland due to this famine. Many came to America, packing their love of potatoes with them.

It wasn't until Benjamin Franklin attended a dinner in France where 20 potato dishes were served that America's love affair with potatoes began. When President Thomas Jefferson served French fried potatoes in the White House, the vegetable was destined for success.

Potatoes are grown as annual plants, with fields planted in the spring and harvested in the fall. Potatoes are grown from special potatoes called "seed potatoes" that are planted in the soil. The part of the plant that we call the "potato" grows underground on a specialized stem and they are known as tubers. Potatoes can be stored for several months after harvest by maintaining cool temperatures with high humidity.

In October 1995, the potato became the first vegetable grown in Space. NASA and the University of Wisconsin, Madison, experimentally grew potatoes in space with the goal of feeding future astronauts on long voyages or for future space colonies.

*From the Colorado Potato Administrative Committee ([www.coloradopotato.org](http://www.coloradopotato.org))*

# Agriculture and Technology

In the span of one lifetime farmers have gone from plowing with horses to using huge 350 horse power tractors and combines. Many of these tractors have air conditioned cabs and some have auto-steer (a computer that steers the tractor for you). Some tractors have computers that sense moisture and GPS (global positioning system) technology. GPS uses satellites to help the farmer pinpoint their position on the earth. This allows them to manage the land and crops with more accuracy than before. GPS also help the farmers use the correct amount of fertilizer and seed, saving money and protecting our environment.

Today, farmers and ranchers monitor crop and livestock prices on a computer. Ultrasound technology tells the rancher how much muscle and fat a particular animal has. With this information, ranchers can make decisions about feeding and breeding their cattle. Feedlots also use the latest technology including computer chips to store information about feeding and keeping their animals healthy.

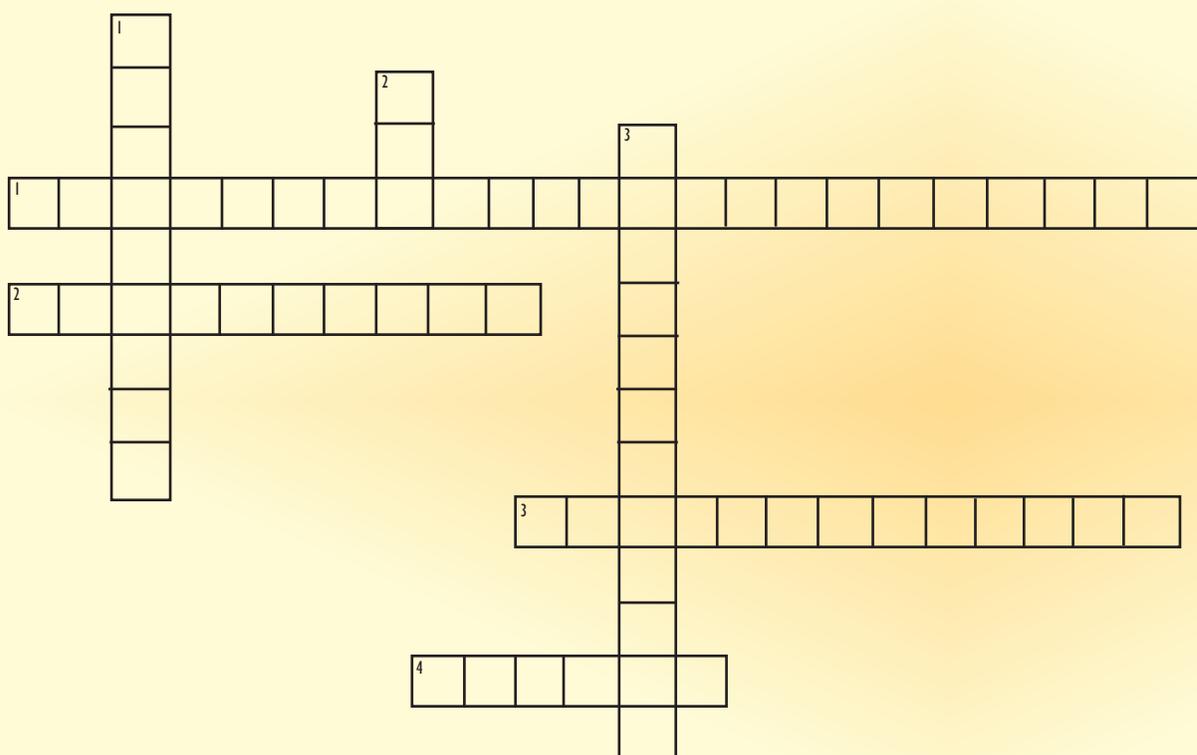
Biotechnology, in one form or another, has been used since prehistoric times. When people realized they could plant crops and breed animals for specific traits, they were using biotechnology. Examples of biotechnology are when we use yeast cells to raise bread and bacterial cells to make cheese. In the last several years though, scientists have been

able to take biotechnology to a new level. Using genetic technology we can now combine the genetic elements of two or more living cells. According to some experts, biotechnology could double or triple the amount of food farmers can grow per acre.

Biotechnology includes GMOs or genetically modified organisms. One example is corn that is resistant to insects. Another example is cotton that resists Roundup (a weed killer) – so weeds can be killed without harming the cotton plant. Other genetically engineered food can include: soybeans, canola, squash and papaya.

In the future, genetically modified food could provide us with daily doses of medicines and vaccines. When biotechnology is used this way it is called “Agricentials.” These products could help protect people from life-threatening diseases. Elderly people could especially benefit because they typically receive less protection from traditional vaccines. Biotechnology will also contribute to medical research and surgical techniques that help save lives.

The development of hybrids or new breeds of crops, fertilizers, pesticides, irrigation and new machines has changed agriculture forever. Technology has increased productivity, making food and medicine less expensive for all Americans.



## ACROSS

1. GPS
2. Technology used by ranchers to determine amount of muscle and fat on a particular animal.
3. When biotechnology is used for medicine and vaccines.
4. A new breed of crop or animal.

## DOWN

1. A computer that steers a tractor
2. Abbreviation for genetically modified organism.
3. Technology used by feedlots to keep track of food and medicine consumed by animals.