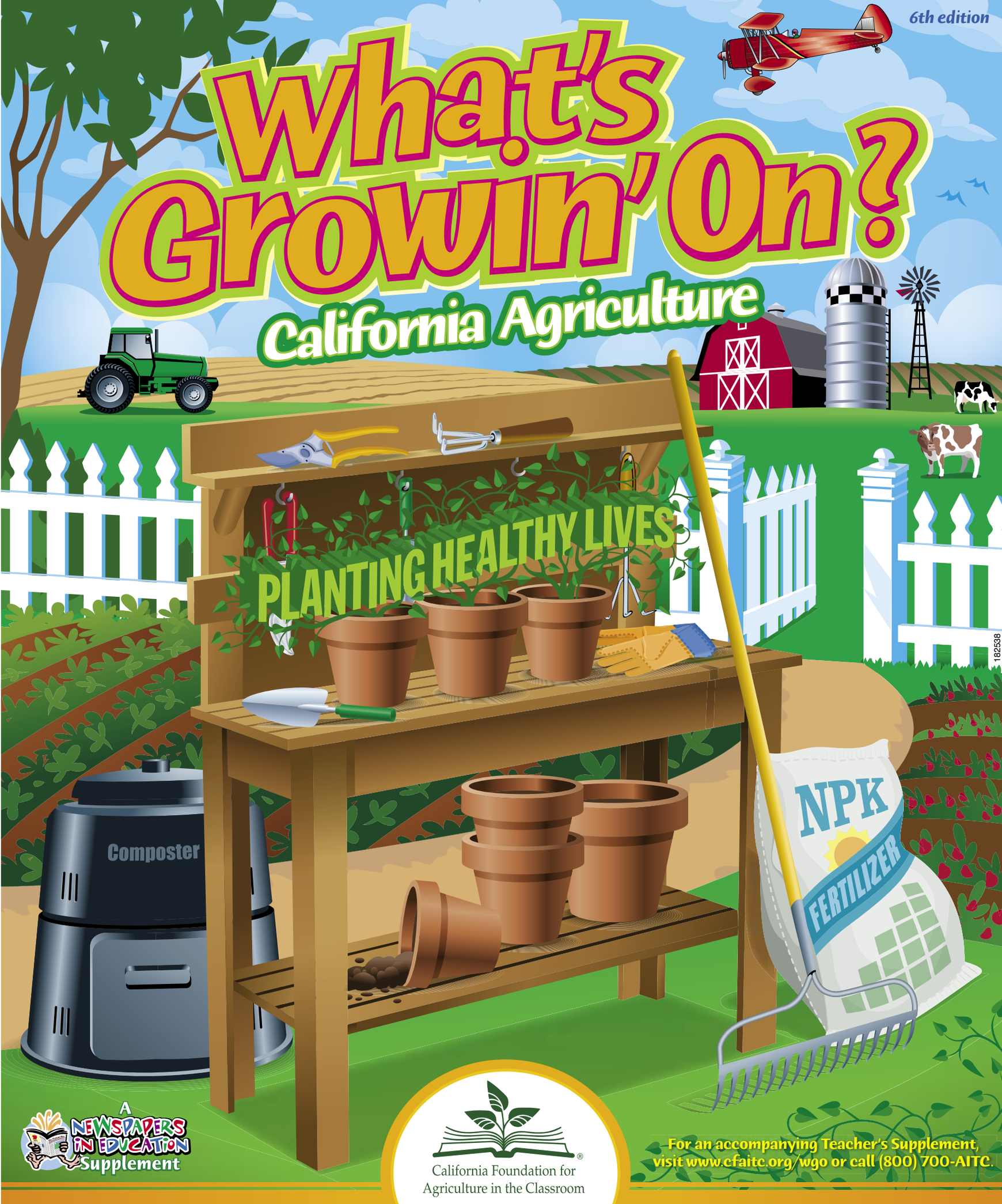
6th edition

What's Growin' On?

California Agriculture



182538

A Newspapers in Education Supplement

California Foundation for Agriculture in the Classroom

For an accompanying Teacher's Supplement, visit www.cfaitc.org/wgo or call (800) 700-AITC.

Greetings from the Garden of Agriculture!

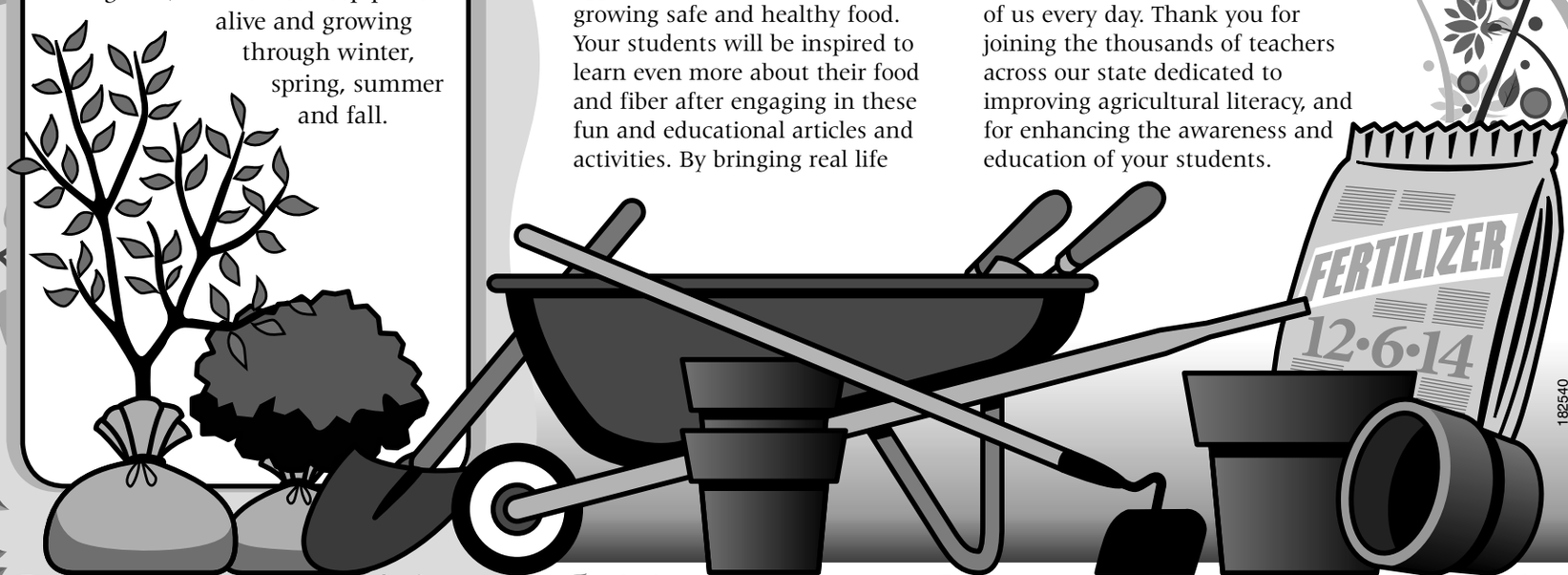
Open the garden gate to explore the growing food frenzy on the farm! Food is fuel, and just like humans, animals and plants also need food to grow. Farmers and ranchers are responsible for producing the supply of food, clothing and shelter that we all need daily. It is up to the rest of us to keep the nutritious supply of food flourishing in California, the nation and the world for years to come.

Nutrients are important for humans, and are necessary to ensure we get the vitamins and nourishment we need to maintain a healthy diet. Plants provide us with nutrition, but they also require it, too. That's why it is important that our fruits, vegetables and other plants get their own proper care. Replenishing the land that we use with the appropriate nutrients will help maintain the flow of a healthy food supply. Learn how to sustain healthy plants and a healthy lifestyle through California agriculture. Test your knowledge and learn fun facts about where your food comes from, how food grows, and how to keep plants alive and growing through winter, spring, summer and fall.

Table of Contents

Teachers:

The 6th edition of ***What's Growin' On?*** was created and reviewed by educators to demonstrate the importance of agriculture and to show how it affects every individual in every aspect of our lives. The activities and information on the following pages will connect you and your students to the world of farmers, ranchers and growers and invite you to engage in hands-on opportunities to learn more about growing safe and healthy food. Your students will be inspired to learn even more about their food and fiber after engaging in these fun and educational articles and activities. By bringing real life agricultural scenarios into your classroom, your students will gain a personal understanding of the process involved in producing food, clothing and other necessities often taken for granted. Nutrition, science, history, math and many other subject areas are demonstrated in the following pages while allowing a glimpse into the world of California agriculture that sustains each and every one of us every day. Thank you for joining the thousands of teachers across our state dedicated to improving agricultural literacy, and for enhancing the awareness and education of your students.



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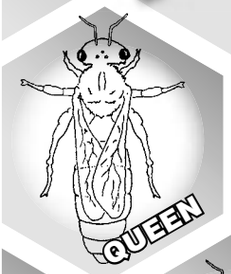
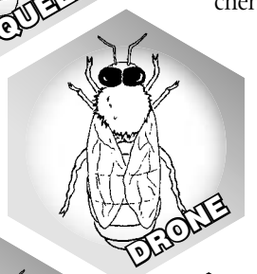
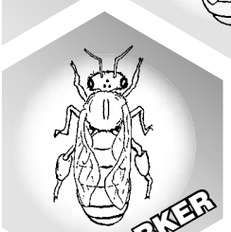
What's the Buzz?



- Bees collect nectar and pollen from blossoms, trees and shrubs.
- Without **pollination**, we would not have many fruit and vegetable crops. Some of the crops bees pollinate are: alfalfa, almonds, apples, avocados, cantaloupes, cherries, cucumbers, honeydew, kiwifruit, peas, plums and watermelons.

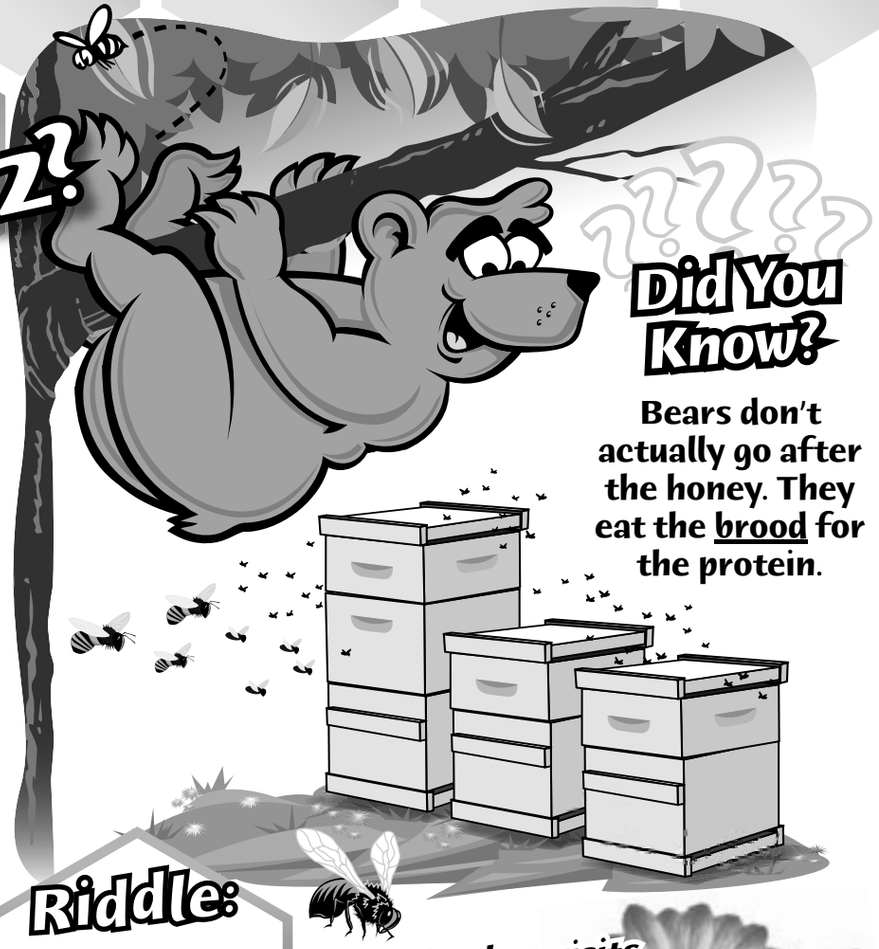


- Worker bees live 5-6 weeks and **queen bees** live 2-3 years.
- A **drone** is a male honey bee that is produced from an unfertilized egg.
- Bees keep their hives "air conditioned" by fanning their wings when they are hot and huddling together when they are cold.



- A **worker bee** will generally travel within a 2-mile radius, but has been known to travel up to 8-9 miles.
- An **apiarist** is a beekeeper. Beekeepers raise bees to produce honey and wax, to pollinate crops and for many other reasons.
- We need to respect bees. If a bee comes near you, remain calm and stand still to prevent being stung.
- A colony is a community of several thousand worker bees, drones and one queen bee.
- Hives are man-made structures created to house bees. A Skep hive is a natural hive built by the bees.

Bees and flowers evolved during the age of dinosaurs. After the Ice Age, man hunted bees with torches to find and consume their honey. The smoke from their torches had a calming effect on the bees, making it easier to collect the honey.



Did You Know?

Bears don't actually go after the honey. They eat the brood for the protein.

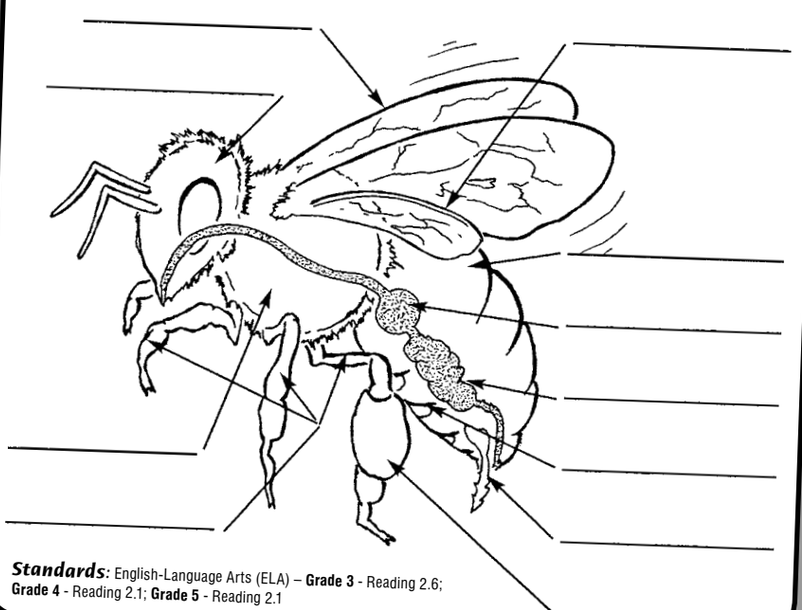
Riddle:

Male bees (drone) have a grandfather, but no father. How can that be? Find out at kids.cfaitc.org/wgo6/bees.

A worker bee visits between 50-100 flowers during a food-hunting trip.

Activity

Label the diagram of the worker bee below with each of the folllowing body parts: Abdomen, Fore wing, Head, Hind wing, Honey sac, Legs, Midgut (or ventriculus), Pollen basket, Stinger, Thorax, Wax gland. Check your answers at kids.cfaitc.org/wgo6/bees



Standards: English-Language Arts (ELA) – **Grade 3** - Reading 2.6; **Grade 4** - Reading 2.1; **Grade 5** - Reading 2.1

182542

Newspaper Activity

Look in the grocery ads of your newspaper. Clip ads with honey or honey products. Add up the total cost of the products.

Standards: English-Language Arts (ELA) – **Grade 4** - Reading 2.2; **Grade 5** - Reading 2.1; **Grade 6** - Reading 2.1; Math; **Grade 3** - Number Sense 1.1, 2.1, 3.3; **Grade 6** - Number Sense 1.4

Imagine This...

Honey Bzzz... Experience the life of a bee with your own tour guide, Jafina. Jafina describes the everyday chores of a drone bee and how to get promoted to a worker bee. This award-winning story "Honey Bzzz..." by Amelia Clyatt from Golden Eagle Charter School, can be viewed at www.cfaitc.org/imaginethis/honey.

Sources: www.pbs.org/wgbh/nova/bees www.honey.com "The Honey Files: A Bee's Life" Teaching Guide, produced by the National Honey Board, 2001.

Artists, Writers & Shutterbugs!

Many of the greatest creative minds in our nation's history were inspired by the majestic beauty of farms and fields. A waving corn field, blossoming orchard or herd of grazing cattle on a hillside have all brought out the inner artist in countless Americans. See how you, too, can allow modern-day agriculture to take you to new creative heights through many artistic mediums...

Classic Art

Painting
Sketching
Sculpting

The Written Word

Poetry
Novels
Non-fiction
Journalism
Song-writing

Photography

Artistic photography
Photojournalism

Performing Arts

Singers
Dancers
Musicians
Actors
Cowboy poetry

Go to the library and check out "Leaves of Grass" by Walt Whitman. Read a poem to your classmates.

Show Your Artistic Side!

Student Contests:

Imagine this...
www.cfaitc.org/Imaginethis

California Farm Water Coalition Poster Contest
www.cfwc.com/kids_corner

California Farm Bureau Photo Contest
www.cfbf.com/programs/photo

Newspaper Activity

Using the newspaper, clip out agricultural photos and create a collage by gluing them to paper and adding your own artistic touch with paint, crayons or oil pastels.

Standards: Visual and Performing Arts – **Grade 3** - Visual Arts, Creative Expression 2.3, 2.4

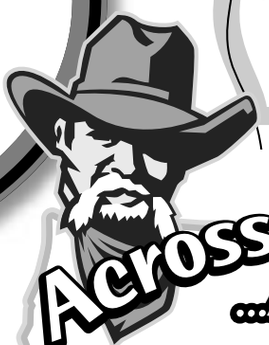
Try This Activity

- Take a photograph or draw a sketch of an agricultural item or scene.
- Write a poem relating to agriculture. Recite it for classmates.
- Write and perform a puppet show, play or song.
- Read a **biography** about an agricultural pioneer (John Deere, Luther Burbank, George Washington, etc.). Dress up and tell "your" story to your classmates.
- Make up a line dance or **square dance** inspired by country line or square dance routines.

Standards: Visual and Performing Arts – **Grade 3** - Visual Arts, Connection, Relationships, Applications 5.2; **Grade 4** - 5.4; Dance **Grade 3** - 2.1, 2.3, 3.2; **Grade 4** - 2.1, 2.4, 3.1, 3.4; **Grade 5** - 2.1, 3.1, 4.1; **Grade 6** -2.6, 2.7, 2.8; **Grade 7** - 1.1; **Grade 8** - 1.1, 1.2

Did You Know?

In 1947 Marilyn Monroe was crowned Miss California Artichoke Queen.



Across the Nation ...Activity

Gather with the real buckaroos in Elko, Nevada for the annual Cowboy Poetry gathering. The event takes place the last weekend of January at the Elko Convention Center.

182544

MISSION OLIVES
California's Sacred Fruit
...a living link to California's past

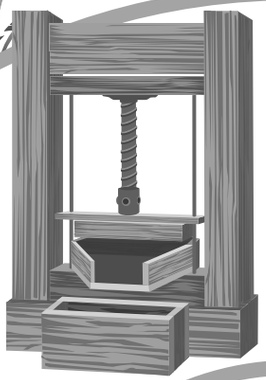
California produces nearly all the olives in the United States; over 34,000 acres!

The first olive trees were planted at the San Diego Mission by Franciscan Monks in 1769.

The olive tree is one of the oldest known *cultivated* trees in the world. They have a life span of 300-400 years.

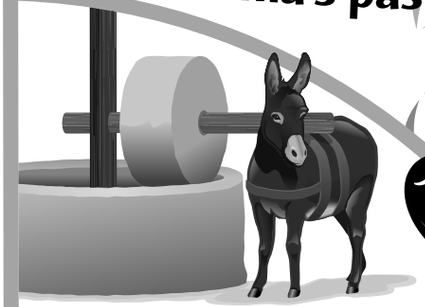
MAKING OLIVE OIL AT THE CALIFORNIA MISSIONS

A



Pressing the olive oil: A screw press was made from local wood. Olive paste was layered under the press and then the screws tightened to squeeze out the oil and vegetable water.

B



Grinding the fruit: Donkeys pulled a large round grindstone, held in place by wooden timbers around a trough made of stone to grind all the olive pits and flesh into a paste.

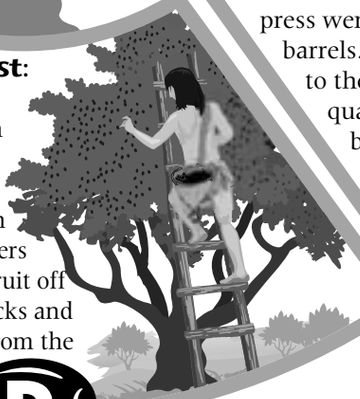
C

Separating the oil from the vegetable water: The oil and water from the screw press were poured into wooden barrels. The pure oil floated to the top. The lesser quality oil settled beneath the top layer.

The olive tree is very efficient at extracting nutrients from the soil. Nitrogen is usually the only nutrient which must be added or supplemented as a fertilizer.

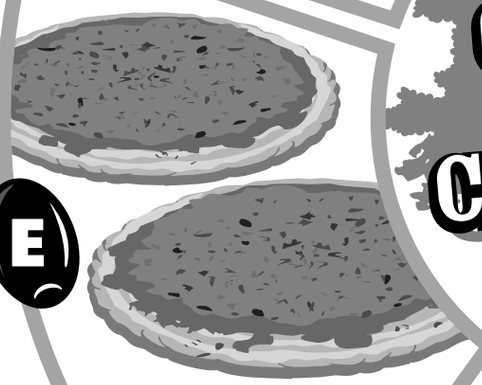
(Source: http://aggie-horticulture.tamu.edu)

D



The harvest: Harvesters used ladders made from tree branches to pick the fruit off the trees and gathered the olives in buckets tied to their shoulders or waist. They also beat the fruit off the branches with long sticks and gathered the fruit from the ground.

E



The paste was spread on round woven mats made from local **reeds** and taken to the wooden press.

Try This Activity

Making olive oil was a long, hard process! Can you make olive oil like the California missionaries? Put the above steps from the "Making Olive Oil at the California Missions," wheel in chronological order by placing the letter next to the step number. To check your answer, visit kids.cfaitc.org/wgo6/olives.

Step 1: ___

Step 2: ___

Step 3: ___

Step 4: ___

Step 5: ___

Standards: Math – **Grade 3** - Statistics, Data Analysis, and Probability 1.0; **Grade 5** - Math Reasoning 1.1, 1.2; History-Social Science – **Grade 4** - 4.2.4; ELA **Grade 6** - Reading 2.5

Different Grades – Different Purposes

Once in barrels, the oil separated into three distinct layers. These became the three olive oil products traditionally used at the mission. Each quality of oil had a purpose in mission life.

The clear oil rose to the top of the barrel. This top-quality olive oil fulfilled two purposes at the mission:
Sacramental Use – pure olive oil was blessed by the Fathers to be used during Baptism and Confirmation.
Cooking Oil – was used for baking bread, for sautéing vegetables and other fine cooking purposes.

The second layer of oil was used as fuel for oil-burning lamps.

The **pomace** sank to the bottom of the barrel. Pomace is the solid matter that is left after the olives are crushed and the oil has been removed. The pomace was used to make soap and to grease wagon wheels, mills and even squeaky doors.

Sources: www.CalOlive.org www.oliveoilsource.com www.olives.com http://aggie-horticulture.tamu.edu www.moprep.org/history.html www.globalgourmet.com/food

182545

Corn is A-"Maize"-ing!

History

Corn, also known as maize, is a cereal grain that was domesticated in Mesoamerica as many as 10,000-12,000 years ago. Corn is a member of the grass family and grew wild in what is modern-day Mexico. Native Americans grew corn as a crop and fertilized the seed by planting it with dead fish. The decaying fish contained nitrogen, which corn needs for good growth.

Today, corn is **cultivated** on every continent except Antarctica. The three types of corn grown for human consumption are dent corn (grain), sweet corn (vegetable) and popcorn (food snack).

Did You Know?

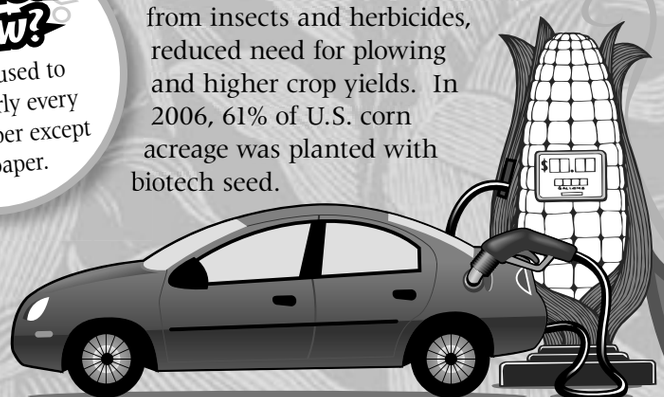
85% of all corn is used to feed livestock.

Technology and Change

More than 95% of U.S. corn acreage planted is **hybrid** corn. Hybridization is a breeding process used to improve plant characteristics and increase yield. Hybrid varieties were developed to adapt to specific growing conditions and locations, and they are continually being improved through **biotechnology**. Biotech corn offers in-plant protection from insects and herbicides, reduced need for plowing and higher crop yields. In 2006, 61% of U.S. corn acreage was planted with biotech seed.

Did You Know?

Corn is used to make nearly every kind of paper except newspaper.



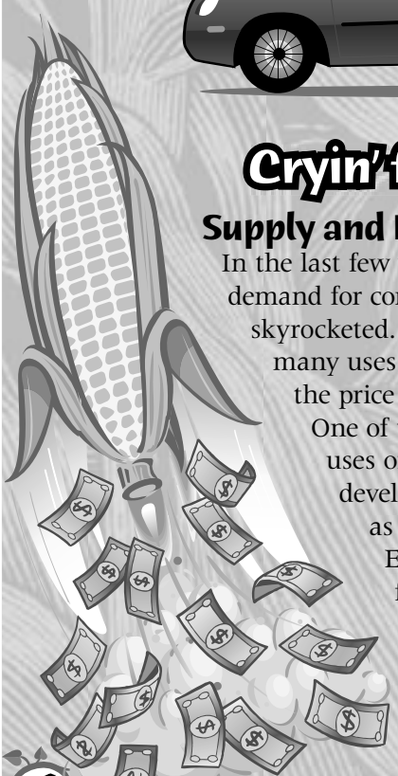
Cryin' for Corn!

Supply and Demand

In the last few years the demand for corn has skyrocketed. There are so many uses for corn that the price has also soared. One of the newest uses of corn is in the development of **ethanol** as a fuel for automobiles. Ethanol is one of many alternative fuels developed to help solve the world's energy crisis. When any product is in high demand and in short supply, the price goes up.

Did You Know?

California grows 18% of the world's sweet corn but isn't one of the top 10 corn producers in the U.S. Which states grow the most corn? Visit kids.cfaitc.org/wgo6/corn to obtain answers.

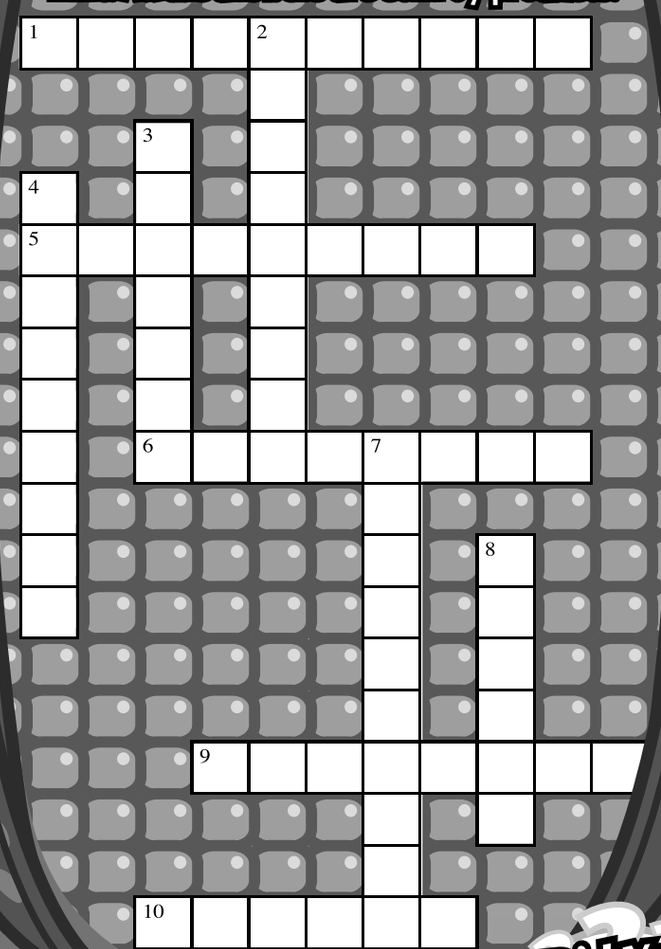


Sources: http://www.cfaitc.org/Commodity/Commodity.php

Activity
Crossword Puzzle

(Check your answers on kids.cfaitc.org/wgo6/corn)

Complete the crossword!
Hint: All the answers are corn by-products.



Did You Know?

40% of the world's corn is produced in the U.S.

ACROSS

1. Moldy antibiotic that fights infections
5. Sticky stuff like paste
6. A splash of color for the lips
9. TNT
10. Doctor's hands operate in them

DOWN

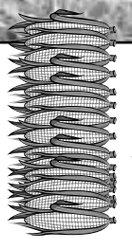
2. A sweetener in many sodas and juices
3. Corn produces this fuel for cars
4. Runs Ipods, cell phones and flashlights
7. Product that cleans your teeth
8. Your car seats and couches are covered in this

182547

Dollars and "Sense"
Agriculture Economics

An Acre of Production

Then...
1900
40 bushels of corn per acre



Now...
2006
149.1 bushels of corn per acre

Did You Know?
One acre is about the size of a football field, without the end zones, or 43,560 square feet.

Following the Market

Review your newspaper's stock quotes. Track a commodity for one week.

.36 CPO N CornPdts 44.02 +.52

Reading Stock Quotes

Div	Tkr	Ex	Name	Lst	Cng
1.43	EXC	N	Exelon	50.73	+.43
1	2	3	4	5	6

1. **Div** Dividend
2. **Tkr** Ticker symbol
3. **Ex** Stock Exchange **N**=NYSE **O**=NASDQ **A**=AMEX
4. **Name** Abbreviated name
5. **Lst** The stock closing price
6. **Cng** Change in price from previous day's closing

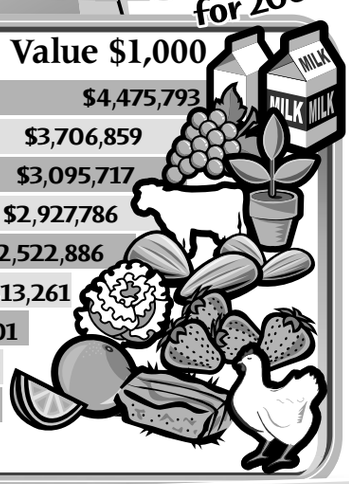
Newspaper **Activity**

Learn how to read the **stock report** page in the newspaper. Pick a stock and follow it for one week and see how it changes.

Standards: Math Reasoning – **Grade 3** – 1.1, 3.3; **Grade 4** – 1.1,3.3; **Grade 5** – 1.1, 3.3; **Grade 6** – 1.1, 3.3; **Grade 7** – 1.1, 3.3

California's Top 10 Commodities for 2006

	Commodity	Value $1,000
1	Milk and Cream	$4,475,793
2	Grapes	$3,706,859
3	Nursery Products	$3,095,717
4	Cattle and Calves	$2,927,786
5	Almonds	$2,522,886
6	Lettuce	$1,813,261
7	Strawberries	$1,340,101
8	Oranges	$1,055,666
9	Hay, Alfalfa	$1,038,935
10	Chickens	$891,702

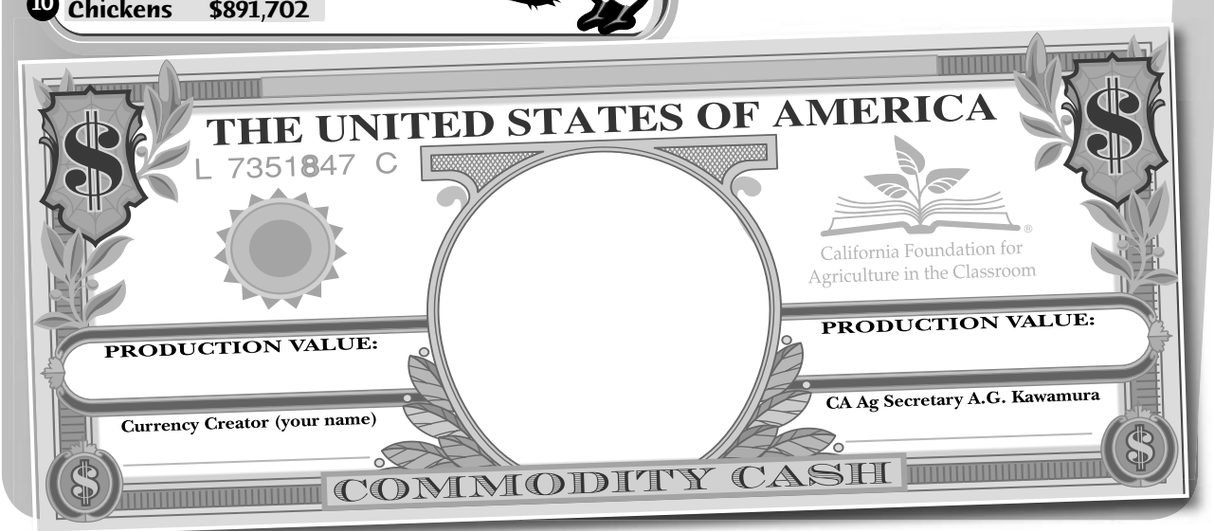


Activity
Commodity Cash

Design your own dollar bill. Choose one of the top 10 **commodities** produced in California. Draw a picture of your commodity in the center. Add the total production value of your commodity for the most recent year in the space provided (example: Milk would have a value of $4,475,793).

Standards: Visual and Performing Arts – **Grade 3** – Creative Expression 2.4; Math – **Grade 4** – Number Sense 1.0; **Grade 5** – Number Sense 1.1

Use the dollar bill below, or print your own money online at kids.cfaitc.org/wgo6/money.



Weather plays an important role in plant and animal production. Bad weather can ruin or delay a crop, making less food available or production costs rise. This can then cause food to become more expensive to the consumer.

Fuel Farming

America's farm fields don't just produce fuel for our bodies. Crops such as corn, safflower, sugar cane and soybean are used to produce renewable fuels. Use the following facts to create a bar graph to illustrate the growth of this fuel production trend since 1980.

Year	Millions of gallons
1980	175
1985	610
1990	900
1995	1400
2000	1630
Today	2810

Standards: Math – **Grade 3** – Number Sense 1.1, 2.1, 3.3; Algebra and Functions 1.1, 1.2, 2.1; Math Reasoning 1.0, 2.3, 2.4, 2.6; **Grade 4** – Number Sense 1.1, 2.1, 3.1; Statistics, Data Analysis, and Probability 1.3; Math Reasoning 1.0, 2.3, 3.2, 4.2b; **Grade 5** – Number Sense 2.1; Algebra and Functions 1.1; Math Reasoning 1.0, 2.3, 2.4; **Grade 6** – Math Reasoning 1.1, 1.3, 2.4, 2.5; **Grade 7** – Number Sense 1.2; Math Reasoning 1.1, 1.3, 2.5, 2.6

Sources: California Ag Statistics – USDA, NASS Farm Facts www.fb.org
Illinois AITC http://www.cfaitc.org/Commodity/Commodity.php

Standards: Visual and Performing Arts – **Grade 3** – Creative Expression 2.4; Math – **Grade 4** – Number Sense 1.0; **Grade 5** – Number Sense 1.1

182548

What's the Recipe for a Healthy Plant?

To establish healthy growth, all plants require certain nutrients that normally come from the soil. Just like you need your vitamins, plants require certain nutrients for survival. They also require sun, water, and air.

So What is a Fertilizer?

Any type of substance that is added to soil or water to increase the nutrients available to plants is considered a **fertilizer**. Fertilizers can be in a form of solids, liquids and gases.

Fertilizer labels are set up in a standard way so consumers do not get confused. On the front of any fertilizer box, bottle or bag, there are three numbers. The numbers are always in the same order. The numbers represent the percentage of each particular nutrient. The three main nutrients are listed on the front. The other substances are listed on a smaller label.

- **N** Nitrogen (N) is the first number
- **P** Phosphorus (P) is the second
- **K** Potassium (K) is the third

Why Use Fertilizers?

There are 17 natural nutrients plants need to be healthy. Three of them are: nitrogen, potassium and phosphorus. As plants grow, they take the nutrients from the soil. Farmers realize how important it is to return those nutrients so the next crop will grow. Fertilizers serve to replenish the soil with nutrients. Without the correct amount of nutrients, plants cannot grow properly.

Who Uses Fertilizers?

Farmers and gardeners do! The type they apply depends on what the plants need. A crop like corn needs lots of nitrogen so a fertilizer with a high first number, like 32-0-0, would be used.

Where Do Fertilizers Come From?

The environment! The elements found in fertilizers are natural and come from above, below or on the Earth's surface. They are natural resources, therefore, we must manage them properly.

Try This Activity

Read this fertilizer label and calculate the percentage of the nitrogen, phosphorus and potassium.

N=____ P=____ K=____

Standards: ELA – **Grade 3** – Reading 2.7; Science – **Grade 6** – 6c; Math, Number Sense – **Grade 3** – 3.2; **Grade 4** – 1.2, 2.2; **Grade 5** – 1.2; **Grade 7** – 1.3

Try This Activity Chemistry Code

Use the chart to decode the answers in the puzzles below.

1) _____ _____ _____ _____ _____ _____ _____ _____ makes plants grow quickly.
14 9 19 18 15 7 5 14

2) Sulfur helps make plant _____ _____ _____ _____ _____ _____ _____ _____ _____
16 18 15 19 5 9 14 20

3) Phosphorus can come from _____ _____ _____ _____ _____
18 15 3 11 20

4) The process of combining sunlight, water and carbon dioxide to produce oxygen and sugar is called _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
16 8 15 19 15 20 25 14 19 8 5 20 9 20

A	B	C	D	E	F	G	H	I
1	2	3	4	5	6	7	8	9

J	K	L	M	N	O	P	Q	R
10	11	12	13	14	15	16	17	18

T	S	U	V	W	X	Y	Z
19	20	21	22	23	24	25	26

Standards: ELA - Reading - **Grade 3** - 1.1, 2.7; **Grade 4** - 1.5, 2.7; Science - **Grade 5** - Physical Science 2e, 2f, 2g; **Grade 8** - Structure of Matter 3f

Sources: California Fertilizer Foundation, Western Fertilizer Handbook, 2002

Health Hut

Smoothie for Humans
Want to make a smoothie you can drink?! Check out kids.cfaitc.org/wg06/smoothie

Basic Blend

...gen
...plants grow
...n chlorophyll, ...elps plants ... energy from light.
...DNA and RNA, the ...material that makes ...hat they are.

...phorus
...ergizer—helps ...nd transfer energy.
...plants like ...ds require a lot of ...orous.
...tes root growth.
...owers bloom.
...lants make seeds.

K Potassium
- The regulator- involved in lots of enzymatic reactions.
- Helps plants resist pests and drought.
- Helps build cellulose, which gives stems strength.

Ca Calcium
- Helps new cells to form.
- Helps keep stems strong.
- Helps keep blossoms and buds on stems and branches.

S Sulfur
- Helps make plant proteins.
- Prevents slow growth and weak plants.
- Gives garlic and onions their smell.

Mg Magnesium
- Central part of chlorophyll, which helps plants capture energy from light.
- Added to sandy soils.
- Often added to celery, potato and citrus plants.

Super Supplements

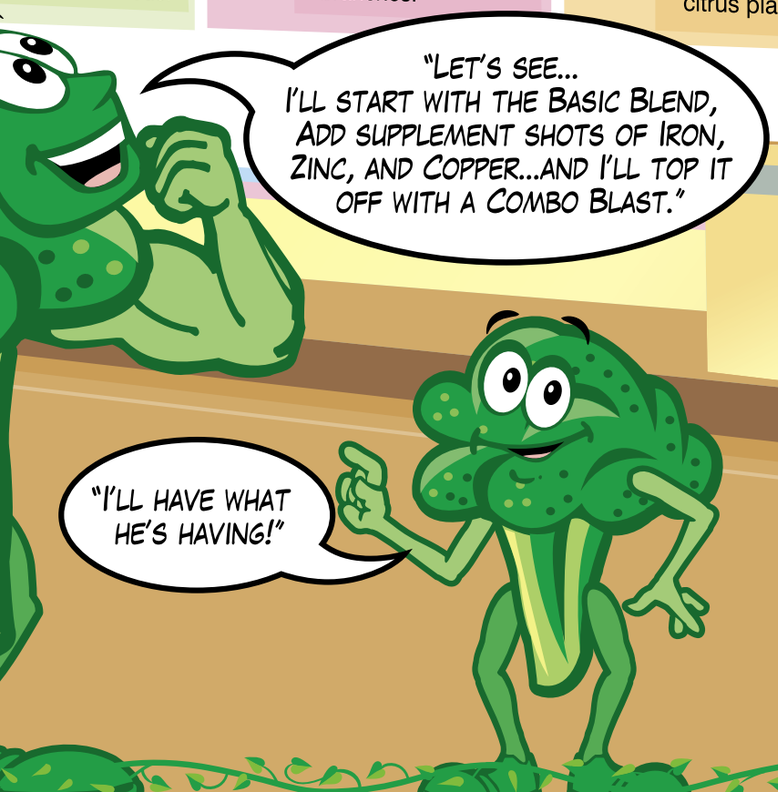
Fe Iron
- Required for chlorophyll production.
- Makes plants green.
- Helps grasses, corn, alfalfa and tree crops stay strong.

Zn Zinc
- Regulates plant growth.
- Keeps young plants strong.

Cu Copper
- Helps make Vitamin A.
- Prevents leaves from wilting.
- Required for protein production.
- Helps trees and vines grow strong.

Combo Blast

- **B** Boron
- **Ni** Nickel
- **O** Oxygen
- **C** Carbon
- **H** Hydrogen
- **Mn** Manganese
- **Cl** Chlorine
- **Mo** Molybdenum



Try This Activity

Using the Health Hut menu, pick ingredients from the Basic Blend, Super Supplements and Combo Blast menu and write a recipe for one of the "Healthy Products" on the right. Write a paragraph describing why you chose the nutrients you did. Be sure to use proper spelling and grammar and well-written topic and concluding sentences. Isn't it amazing what plants need in order to grow?

"Healthy Products"
- Sweet juicy watermelon.
- Crispy green celery.
- Rose bush that grows long stem roses.
- Your favorite plant.

Standards: Science – **Grade 3** – 1b, 3a, 3d; **Grade 4** – 2a, 2b, 2c, 3b; **Grade 5** – 1c, 1f, 1h; **Grade 8** – 3f, 6a, 6b; ELA **Grade 3** – Reading 2.3, Writing 1.1; **Grade 4** – Writing 1.2, 2.3b; Writing and Oral English Language Convention 1.1; **Grade 5** – Writing 1.2, 2.4; **Grade 6** – Writing 1.2, 2.5; **Grade 7** – Writing 2.4; **Grade 8** – Writing 2.4

Moderation Nation: Nutrition Counts

Nutrition Express

What is Variety?

Variety means eating many different types of foods from all the food groups.

What is Moderation?

Moderation means that it's okay to occasionally eat foods that do not fit in the pyramid. There are no good or bad foods, but rather some foods are more healthful than others. The majority of our intake should come from healthy foods.

What is MyPyramid?

MyPyramid is a tool that is used to communicate the proper ratio of the various food groups from which we eat. Each colored band represents a different food group, including orange for "grains," green for "vegetables," red for "fruits," yellow for "oils," blue for "milk," and purple for "meats and beans."

Why is Eating Healthy Important?

Along with physical activity, the food we eat is directly related to our health. Health disparities exist between those students (and adults) who generally consume a healthy diet compared to those who don't. Various aspects of eating – eating breakfast for instance – have been linked to improved academic performance. Well-nourished students learn better.

What is a Healthy Diet?

A healthy diet consists of a wide range of foods and beverages consumed with variety and moderation. MyPyramid is a tool that shows the most healthful way to eat, based on the relative number of servings from each food group. Fruits and vegetables are important parts of MyPyramid.

What is a Serving?

A serving represents a single portion of one particular type of food. Serving sizes vary based on the type of food. For instance, a single fruit serving is one cup. More specific information about serving size can be found at www.mypyramid.gov

Source: mypyramid.gov

Grains	Vegetables	Fruits	Milk	Meat & Beans
Make half your grains whole	Vary your veggies	Focus on fruits	Get your calcium-rich foods	Go lean with protein
Start smart with breakfast. Look for whole-grain cereals. Just because bread is brown doesn't mean it's whole-grain. Search the ingredients list to make sure the first word is "whole" (like "whole wheat").	Color your plate with all kinds of great-tasting veggies. What's green and orange and tastes good? Veggies! Go dark green with broccoli and spinach, or try orange ones like carrots and sweet potatoes.	Fruits are nature's treats – sweet and delicious. Go easy on juice and make sure it's 100%.	Move to the milk group to get your calcium. Calcium builds strong bones. Look at the carton or container to make sure your milk, yogurt, or cheese is lowfat or fat-free.	Eat lean or lowfat meat, chicken, turkey, and fish. Ask for it baked, broiled, or grilled – not fried. It's nutty, but true. Nuts, seeds, peas, and beans are all great sources of protein, too.
Eat 6 oz. every day; at least half should be whole	Eat 2 1/2 cups every day	Eat 1 1/2 cups every day	Get 3 cups every day; for kids ages 2 to 8, it's 2 cups	Eat 5 oz. every day

Oils Oils are not a food group, but you need some for good health. Get your oils from fish, nuts, and liquid oils such as corn oil, soybean oil, and canola oil.

Try This Activity

Unscramble the Following Nutrition Words

1. ayhelth_____
2. elsgbtvaee_____
3. sutrif _____
4. mkil_____
5. etma_____
6. gisnra_____
7. tdnomaerio_____
8. tniutoinr_____
9. rxceiees _____
10. cshcoie _____

Plants are the primary source of <u>matter</u> and energy entering most food chains.

Answers:
1.) healthy. 2.) vegetables. 3.) fruits. 4.) milk. 5.) meat. 6.) grains. 7.) moderation. 8.) nutrition. 9.) exercise. 10.) choices.

Try This Activity

Is Your Food a Healthy Choice?

- Look for food low in fats to help reduce the risk of heart disease. The lower the amount of fat, the better the choice.
- Sugar has few, if any nutrients. The less sugar, the better the choice.
- Look at the serving size and determine how many servings you are actually eating. If you double your serving, you double the calories, the sugar, the fat, etc.

Look at the nutrition label on one of the foods you frequently eat. Check the amount of fats, trans fats, calories and sugar on your label. Record these amounts. Is your food a smart food choice?

Standards: Physical Education – **Grade 3** – 4.1, 4.2, 5.1; **Grade 4** – 4.4, 4.6, 5.1, 5.3; **Grade 5** – 4.1, 4.3; **Grade 6** – 4.2, 4.7; **Grade 7** – 4.5, 5.2; **Grade 8** – 4.5

182551

99 Percent Club

California produces 99% or more of these 12 commodities that are distributed in the United States. Identify the counties where the commodities are produced. Draw a line from the commodity stamp to the appropriate counties on the map.

Download commodity icons from kids.cfaitc.org/wgo6/passport.

- **Walnuts -** San Joaquin, Tulare, Stanislaus
- **Olives -** Tulare, Tehama, Glenn
- **Almonds -** Stanislaus, Kern, Merced
- **Raisins -** Fresno, Madera, Tulare
- **Clingstone Peaches -** Stanislaus, Sutter, Yuba
- **Persimmons -** Fresno, Tulare
- **Pomegranates -** Tulare, Fresno
- **Rice -** Colusa, Sutter, Glenn
- **Artichokes -** Monterey, Riverside, San Benito
- **Figs -** Madera, Merced
- **Dried Plums -** Sutter, Tehama, Glenn
- **Ladino Clover for Seed -** Sacramento, Glenn

Did You Know?

Ladino Clover is grown for **pasture**. California produces 99% of the seed for the rest of the country.

Try This Activity

California produces 99% of the nation's dried plums, valued at $130,500,000. What is the value of the remaining 1%?

Standards: Math, Number Sense – **Grade 3** – 3.2, 3.4; **Grade 4** – 1.2, 1.6; **Grade 5** – 1.1, 1.2, 2.1

Across the Nation Activity

Other than California, which states produce 99% or more of any commodity? Which commodities are grown?

Newspaper Activity

Can you locate any of the 99% California grown commodities in your local newspaper?

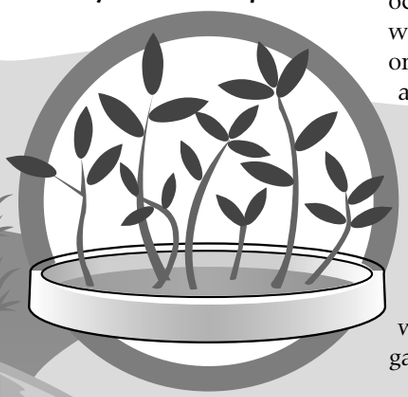
Source: nass.usda.gov

182553

Ready. . . Set. . . .

Desktop Garden

Create a tiny garden for your desktop!



Preparing your Garden Plot

1. Take a clean lid from a peanut butter jar or plastic soup-cup lid.
2. Lay a damp tissue inside the lid.
3. Sprinkle seeds on the area where you want growth to occur: Leave room for small rocks or other items you want to use to perk up your garden. (Use mustard seeds or cress seeds. They are speedy growers and will sprout anywhere as long as they are damp!)
4. Cover the lid with a thick piece of cardboard to block the light and allow seeds to germinate.
5. Check your garden everyday until you see little shoots growing, then you may remove the cardboard. Be sure to continue to keep your tissue damp.
6. Once your seeds have sprouted let them grow by watering your desktop garden regularly. Decorate your gardens with small cars, rocks and even marbles.

Germinate or Terminate?

Some **substances** promote seed growth better than others. Compare these substances as seed sprouting nurseries. **Hypothesize** which liquids will provide the best environment for the seedlings and write a list of your favorites.

Try This Activity

Get five sealable bags, five cotton balls (or substitute paper towels or coffee filters) and five of the following substances (or choose some of your own): liquid fertilizer, coffee, lemon juice, shampoo, tap water, vinegar or paint. Soak each cotton ball in a different liquid, then label each one in its own paper bag, put five seeds in each. Observe for one week.

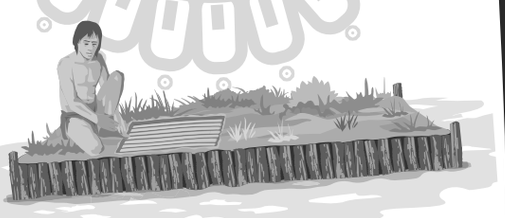
Standards: Science – **Grade 3** – 5d, 5e; **Grade 4** – 6d, 6f; **Grade 5** – 6b, 6d, 6h; **Grade 6** – 7a; **Grade 8** – 9a; ELA – **Grade 4** – Reading 2.4; Writing 2.1a; **Grade 5** – Writing 2.3a

Spuds for your Buds!

Make a flower shop bouquet using a potato, straws and flowers. Lay the potato on its side and stick a few straws into the top of the potato. Fill the straws with water and then place the stems of the flowers inside the straws.

Can Plants Grow Without Water?

The ancient **Aztecs** in Tenochtitlan (present day Mexico) were short of farmland because they were located near a lake, high in a mountainous area. To make up for this problem, they began planting on the tops of rafts called **Chinampas**. Today, some growers use a method called hydroponics where plants are grown in water and have support from fertilizers but no soil.



182554

Grow!

Kooky Containers

Don't have room for a garden? Not a problem! You can grow plants inside anything that will hold soil and has holes in the bottom for water drainage. Try some of these alternative garden containers:

- Tires
- Old boots / shoes
- Plastic deli containers
- Milk cartons / jugs
- Hanging latex gloves
- Wheelbarrows
- Empty cans (soup, coffee, etc.)
- Old bathtubs
- Horse troughs
- Buckets

S.O.S Save our Soil

Have each of your friend scoop up some soil from different areas and put it into a sealable bag. Compare the different bags. Put each bag of soil to its own jar. Fill to the top with water. Shake. Let it settle. See if you can identify the sand, **silt**, and clay that makes soil.

In a Hurry?!

These plants will reward you with fast results! Expect to see growth within three weeks. Remember to water, but not over water. Use containers that are at least 6" wide.

Mangos – Scrub hairs off of husk. Dry husk, cut tips off husk. Cut husk open for the seed inside. Soak seed. Plant!

Radishes – Poke tip of finger in soil, place one radish seed in each hole and cover.

Newspaper Activity

Ecosystem

Recycling! Wet some sheets of newspaper and form them over a small pot until the newspaper is dry. When it dries, pull off the newspaper pot and plant seeds in it. After they sprout, transplant the entire newspaper pot and sprouts directly into the ground!

Standards: English - Language Arts (ELA) - **Grade 3** - Reading 2.7, Writing 1.1; **Grade 4** - Reading 2.2, Writing 1.7, 2.3b, 2.3c; **Grade 5** - Reading 2.3b, 2.3c, Listening and Speaking (LS) 2.2b, 2.2c; **Grade 6** - Writing 1.1, 2.3b, 2.3c, LS 1.6, 2.2b; Science- **Grade 3** - Life Sciences 3a; ELA -**Grade 3** - Reading 2.1, Writing 1.3; **Grade 4** - Writing 1.6, 1.8; **Grade 5** - Reading 2.1, Writing 1.3; **Grade 6** - Reading 2.1

Photosynthesis

Process by which green plants, using chlorophyll and the energy of sunlight, produce carbohydrates from water and carbon dioxide and release oxygen.

$$6CO_2 + 12H_2O \xrightarrow{\text{LIGHT}} C_6H_{12}O_6 + 6O_2 + 6H_2O$$

Try This Activity

Help the plant create oxygen for you to breathe. Label each step of the process to create simple sugars (energy) for the plant.

Standards: **Science 3rd** –Physical 1.a, 1.l Life Science 3.a, **Science 4th** – LS 2.a, **Science 5th** –Physical 1.g LS 2.e, 2.f, 2.g

182556

Going Whole Hog!

More than Just the Squeal!

Today's pork is as lean as chicken and a healthy choice. A recent study at Purdue University shows that pork has a positive effect on diets, especially with women. Pigs are used for meat and for much more! There are hundreds of products made with pig **by-products.** Hogs are the source of over 40 medicines and pharmaceuticals!

- Heart valves for heart surgery
- Epinephrine for allergies
- Insulin for diabetes

Can you find a use?

Pig By-products are Found in Many Other Things, too!

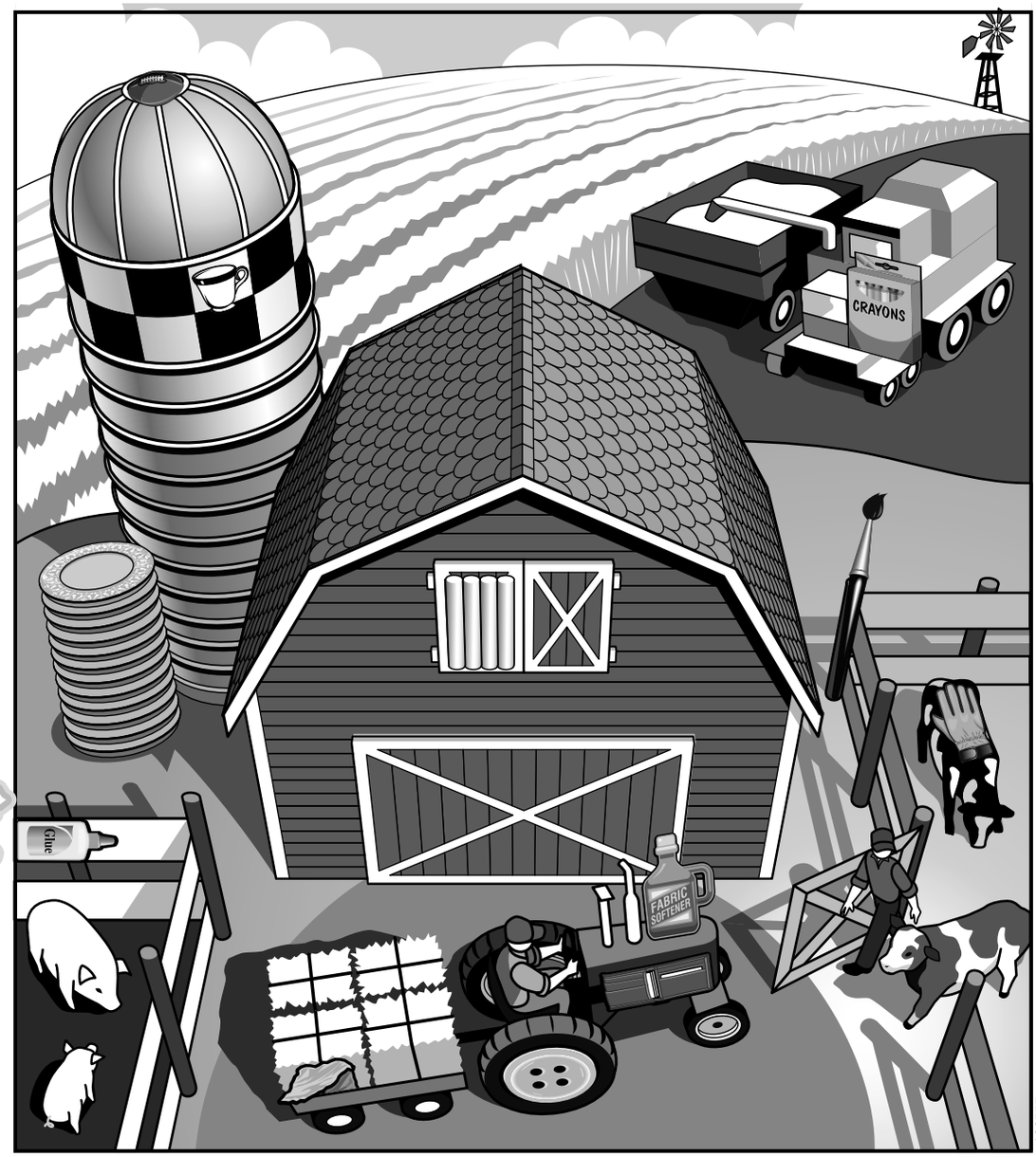
Sports and Leisure
- Football
- Glove
- Wallet

In the House
- Pig ear dog treat
- Buttons
- Bone china
- Fabric softener
- Antifreeze

At School
- Glue
- Artist brush
- Crayons
- Chalk

Try This Activity

How Many Hidden Pig By-products Can You Find in the Picture Below? Try to Find all 12!



Newspaper Activity

Recycle your newspaper! Use your paper to make a paper mache piggy bank!

Standards: Visual and Performing Arts – **Grade 3** – 2.5

Pigs are monogastic - meaning they are simple-stomached like humans. They primarily consume grain products.

Across the Nation ...Activity

Which state is the number 1 hog producer? For the answer, visit kids.cfaitc.org/wgo6/hog.

Source: pork4kids.com

182557

Words to Grow by

Glossary Words

Apiarist – A beekeeper.

Aztec – A member of a tribe of Indians from Mexico before the Spanish conquest.

Biography – A written account of someone's life.

Biotechnology – The use of micro-organisms, such as bacteria or yeast, or biological substances, such as enzymes, to perform specific industrial or manufacturing processes.

Brood – The area in a bee hive within the combs in which young bees are reared; the eggs, larvae.

By-product – A part of a commodity used for something other than the commodity's primary purpose.

Chinampas – A crop or garden floating in water.

Commodity – A transportable resource product with commercial value.

Consumer – Any living thing that depends on the energy stored in other living things for its food supply; individual that purchases and uses goods and services

Cultivate – Tillage of the soil to promote crop growth after the plant has germinated and appeared above ground.

Drone – A male honey bee that hatches from an unfertilized egg. It is larger than a worker bee, does not gather honey and has no sting.

Ethanol – $C_2H_{5O}H$; chemical formula blended with gasoline to make gasohol.

Fertilizer – Any natural or manufactured material added to the soil to supply one or more plant nutrients.

Harvest – To cut, reap, pick, or gather any crop or product of value.

Hybrid – A plant or animal resulting from a cross between parents that are genetically unlike.

Hypothesize – An educated guess; to believe especially on uncertain or tentative grounds.

Matter – Material substance that occupies space, has mass and is composed predominantly of atoms.

Monogastic – Refers to an animal that has only one stomach or stomach compartment, such as swine or humans.

Nitrogen – N; a gas that occurs naturally in the air and soil, where it is converted into usable forms for plant use by bacteria and other natural processes. This nutrient is a constituent of protein and is vital to plant-growing processes.

Nutrient – A substance which favorably affects the nutritive processes of the body.

Pasture – Ground on which such vegetation grows, especially that which is set aside for use by domestic grazing animals.

Phosphorus – P; a chemical element found in soil in various mineral forms, but only small amounts are readily available to plant at any one time. It stimulates early growth and root development.

Pollination – The transfer of pollen from the anther to the stigma of a flower; the first step in production of a fruit or seed.

Pomace - Solid matter that is left after olives are crushed and the oil has been removed.

Potassium - K; the chemical element, an alkali metal, which occurs widely in minerals.

Queen bee – A fully developed, mated, female bee, larger and longer than a worker bee, whose function is to lay eggs.

Reeds – Any tall, slender plant, usually having coarse and jointed stems, including certain grasses and grass-like plants.

Silt – A textural class of soils.

Square dance - American country dancing in which couples form squares.

Stock report – A resource displaying the purchase and sale of stocks and bonds.

Substance – That which has mass and occupies space.

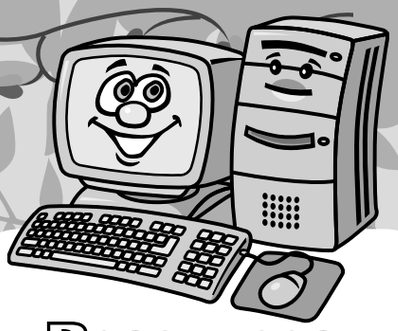
Worker bee – A female bee, other than the queen, whose organs of reproduction are only partially developed, who gathers nectar and pollen, tends to the brood, brings in water and protects the hive.

Activity

Choose five words from the glossary. Write the words on numbered lines to the right. Then find each word in the dictionary. After you find a word, write the guide words for that page on the lines.

Glossary Words	Guide Words	
1._____	_____	_____
2._____	_____	_____
3._____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Standards: ELA - **Grade 3** – Reading 2.7, Writing 1.3; **Grade 4** – Reading 2.2



Resources:

Public Broadcasting Services
www.pbs.org/wgbh/nova/bees

National Honey Board
www.honey.com

California Ripe Olives
www.CalOlive.org

Olive Oil Source
www.oliveoilsource.com

Musco Family Olives
www.olives.com

Texas A&M University
http://aggie-horticulture.tamu.edu

Mission Olive Preservation, Restoration and Education Project
http://www.moprep.org/history.html

Forkmedia LLC
www.globalgourmet.com

Illinois AITC
www.agintheclassroom.org

California Fertilizer Foundation
www.calfertilizer.org

Western Fertilizer Handbook
www.healthyplants.org

California Department of Food and Agriculture
www.cdfa.ca.gov

California Foundation for Agriculture in the Classroom
www.cfaitc.org

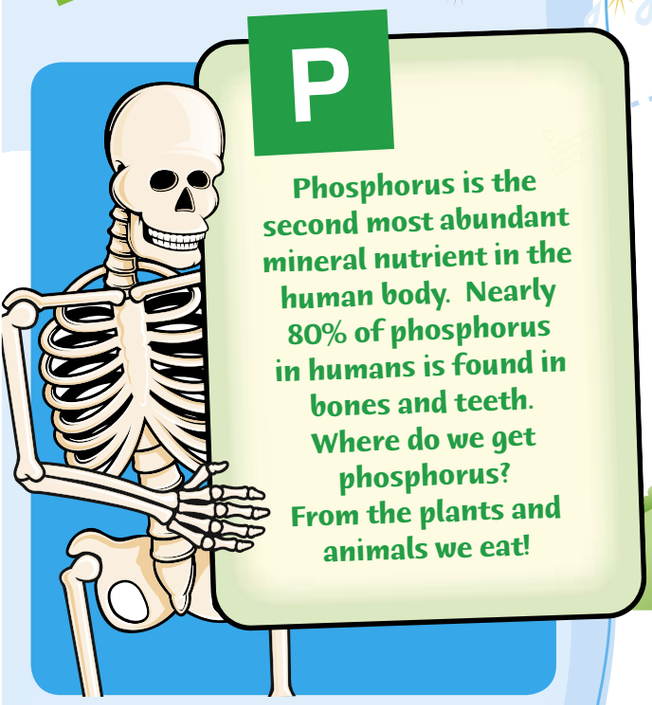
Kids Gardening
www.kidsgardening.com

United States Department of Agriculture
www.usda.gov
www.mypyramid.gov

To request a free ***What's Growin' On?*** Teacher's Supplement that will enhance the use of this newspaper, visit *www.cfaitc.org/wgo* or call (800) 700-2482.

182559

Fun Facts!



P

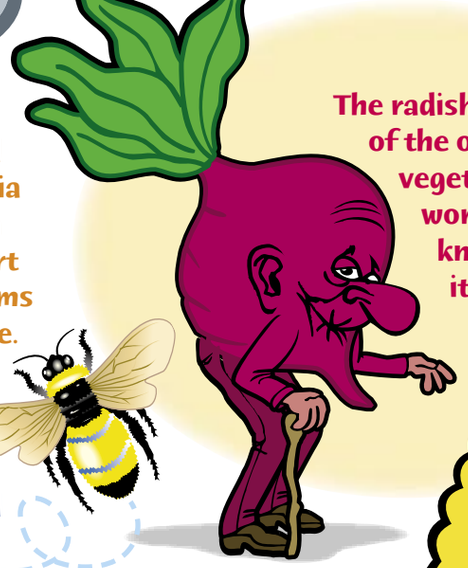
Phosphorus is the second most abundant mineral nutrient in the human body. Nearly 80% of phosphorus in humans is found in bones and teeth. Where do we get phosphorus? From the plants and animals we eat!

Lightning and special bacteria called Rhizobia naturally convert nitrogen into forms that plants can use.

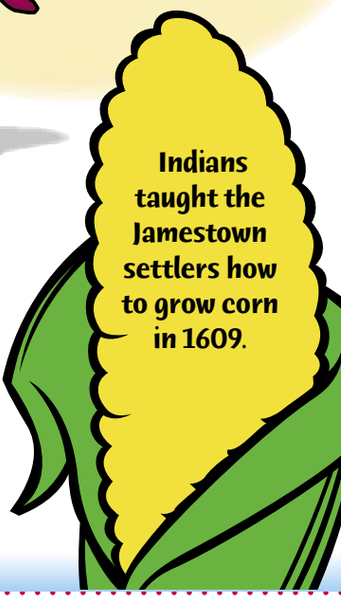
A honeybee has three pairs of legs and four wings and it is the only insect that produces food eaten by humans.

2006 1980

Farmer and ranchers in 2006 received only 19 cents out of every dollar spent on food. The rest went for costs beyond the farm gate: wages and materials for production, processing, marketing, transportation and distribution. In 1980, farmers and ranchers received 31 cents.



The radish is one of the oldest vegetables in the world. No one knows where it originated.



Indians taught the Jamestown settlers how to grow corn in 1609.

Acknowledgements

The California Foundation for Agriculture in the Classroom (CFAITC), a 501(c)(3) nonprofit educational organization, provides educators with low-cost and free materials, training and information to increase student understanding of California agriculture while teaching the core disciplines. Contact CFAITC or www.cfaitc.org for:

- Resources/Lesson Plans
- Story-writing Contest
- Conference Opportunities
- Newsletters
- Web Site (www.cfaitc.org)
- Kids' Corner (kids.cfaitc.org)

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