Harvest of the Month

Network for a Healthy California

Health and Learning Success Go Hand-In-Hand

The classroom is an ideal place to teach students about the importance of eating healthy and being physically active. Studies show a relationship between good nutrition and improved behavioral performance, particularly among those with poor nutritional status. *Harvest of the Month* connects with core curricula and links the classroom, cafeteria, home, and community.

Exploring California Tomatoes: Taste Testing

What You Will Need:

- Variety of tomatoes*
- One tomato of each variety per every four students
- Cutting board and knife for each student group
- Dry erase board and markers

*See *Botanical Facts* on page 2 for varieties. Harvest from your school garden.

Activity:

- Label five columns on board: smell, sound, look, texture, taste.
- Label rows according to tomato varieties.
- Guide students to observe, smell, feel, and taste tomatoes.
- Note students' observations on board.
- Discuss similarities and differences among varieties.
- Graph each student's favorite variety on board to determine overall class favorite.

Follow-up Activity:

Complete the *School Garden* activity on page 4.

For more ideas, visit:
www.fns.usda.gov/tn/

Nutrition Facts

Serving Size: ½ cup tomatoes, sliced (90g)

Calories 16	Calories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 4mg	0%
Total Carbohydrate 4g	1%
Dietary Fiber 1g	4%
Sugars 2g	
Protein 1g	
Vitamin A 15%	Calcium 1%
Vitamin C 19%	Iron 1%

Cooking in Class: Pico de Gallo

Makes 36 tastes at ¼ cup each

Ingredients:

- 3 pounds tomatoes, chopped
- 4½ cups chopped onion
- 1 cup chopped fresh cilantro
- 9 jalapeño peppers, seeds removed and chopped
- 6 cloves garlic, finely chopped
- 6 tablespoons lime juice
- ¾ teaspoon salt
- Small paper cups
- Baked tortilla chips

1. Combine all ingredients in a large bowl.
2. Serve in small cups with baked tortilla chips.

*Nutrition information per serving**:
Calories 17, Carbohydrate 4 g, Dietary Fiber 1 g, Protein 0 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 52 mg

*Information for *Pico de Gallo* only; does not include tortilla chips.

Adapted from: *Healthy Latino Recipes Made With Love, Network for a Healthy California—Latino Campaign,* 2008.

For more ideas, visit:
www.fruitsandveggiesmatter.gov/month/tomato.html

Reasons to Eat Tomatoes

A ½ cup of sliced tomato is:

- A good source of vitamin C and vitamin A.
- A source of vitamin K and potassium.
- Rich in lycopene*, which is a type of phytonutrient called a carotenoid.

*Learn more about lycopene on page 2.

Champion Sources of Lycopene*:

- Pink grapefruit
- Salsa
- Tomatoes
- Tomato products
- Watermelon

*Champion foods are a great source of lycopene.

For more information, visit:
www.eatright.org/Public/content.aspx?id=3542&terms=lycopene
www.nal.usda.gov/fnic/foodcomp/search
(NDB No: 11529)

TOMATOES

What is Lycopene?

- Lycopene is an antioxidant pigment found in tomatoes, watermelon, and pink grapefruit that gives foods their reddish color.
- Lycopene is a carotenoid, which is an antioxidant that may decrease the risk of certain cancers and heart disease and also help to keep the immune system healthy.
- Lycopene cannot be produced in the body so it can only be obtained by eating lycopene-rich foods.
- Cooked tomato products, sauces, and juices contain higher amounts of lycopene than raw tomatoes due to greater concentration (i.e., it takes many cups of raw tomatoes to make one cup of tomato sauce, and thus the lycopene concentration is greater).

For more information, visit:
www.eatright.org/Public/content.aspx?id=3542&terms=lycopene

How Much Do I Need?

A ½ cup of sliced tomatoes is about one small tomato. This is about the same as one cupped handful. The amount of fruits and vegetables each person needs depends on age, gender, and physical activity level. Download a MyPyramid food tracking worksheet* from USDA's Team Nutrition. Have students write down their daily goals and track their food choices. At the end of each week, review worksheets as a class and have students assess if they met their goals and where they need improvement.

*Download worksheet from **http://teamnutrition.usda.gov/resources/mpk_worksheet.pdf**.

Recommended Daily Amount of Fruits and Vegetables*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2½ - 5 cups per day	4½ - 6½ cups per day
Females	2½ - 5 cups per day	3½ - 5 cups per day

*If you are active, eat the higher number of cups per day.
Visit **www.choosemyplate.gov** to learn more.

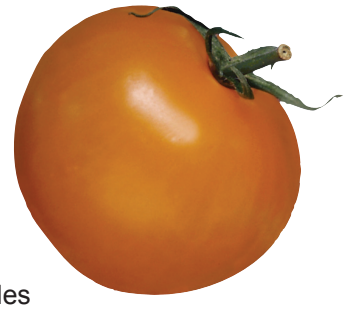
Just the Facts

- There are more than 4,000 varieties of tomatoes ranging in size, shape, and color.
- Botanically, the tomato is a fruit. However, in 1893, the U.S. Supreme Court declared it a vegetable.*
- According to USDA, Americans eat more than 22 pounds of tomatoes each year, more than half of this amount in the form of ketchup and/or tomato sauce.
- Tomatoes are grown in every state in the United States except Alaska.

*See *A Slice of Tomato History* on page 3 for more information.

Source: www.cfaitc.org

Botanical Facts



Pronunciation: tə-mā´tō
Spanish name: tomate
Family: Solanaceae
Genus: *Solanum*
Species: *S. lycopersicum*

The tomato is a berry of the nightshade family, which includes potatoes, eggplants, and peppers. The word "tomato" is derived from the Nahuatl (Aztec language) word, *tomatl*, meaning "something round and plump." Over the years, the tomato has endured many names including "love apple," "golden apple," "apple of paradise," and even "devil apple" by those who believed the tomato to be poisonous.

Varieties are commonly divided into these categories, based mostly on shape, use, and size (small to large):

- **Cherry:** sweet tomatoes, usually eaten whole in salads
- **Plum:** pear-shaped, more meaty, ideal for tomato products, also called Italian or Roma
- **Slicing:** round or globe-shaped, used mainly for commerce and processed products
- **Beefsteak:** round, juicy, used mainly for sandwiches

Other varieties include heirlooms, green, orange, and yellow tomatoes. Yellow and orange tomatoes tend to be sweeter than red and green varieties; only red tomatoes, which contain a red pigment, contain lycopene.

For more information, visit:
www.plants.usda.gov

Student Sleuths

1. Lycopene is an antioxidant that was only recently discovered. Why is it important to our diet? Can the body make its own lycopene?
2. List three nutrients found in tomatoes. Name some of the health benefits of these nutrients. Describe the impact of processing, if any, on each nutrient.
3. How do botanists define fruits? Vegetables? Explain why the tomato is sometimes called a vegetable instead of a fruit.
4. Tomatoes are eaten by people throughout the world. Identify at least five different cultures and research how tomatoes are used in their traditional meals.
5. California grows what percentage of the nation's tomatoes for processing? List five processed tomato products available in most grocery stores.
6. Using a California map, color in the top three tomato-producing counties. In what months does peak harvesting take place in these counties?
7. How are processing tomatoes harvested differently than fresh market tomatoes? Why do processing tomatoes have thicker skins?

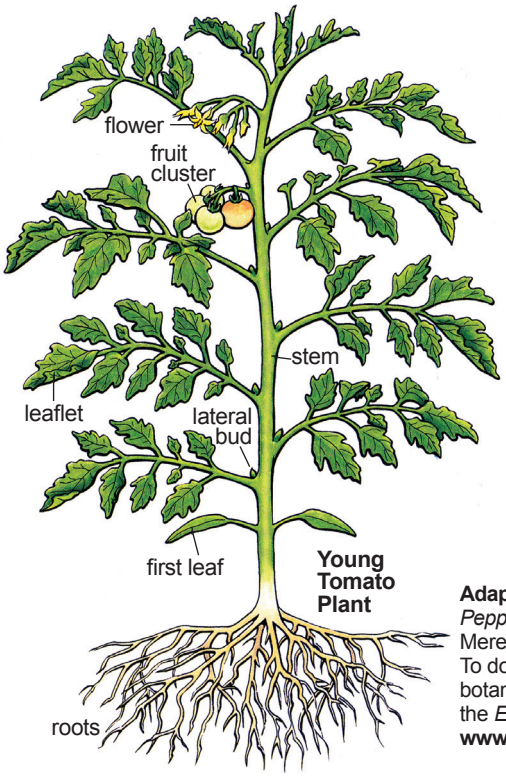
For more information, visit:
www.californiatomatoes.org
www.cfaitc.org/factsheets/pdf/ProcessingTomato.pdf

How Do Tomatoes Grow?

The tomato is a warm-weather perennial plant, sensitive to frost at any stage of growth. In California, fresh-market tomatoes are grown using one of two methods: bush or pole. In the Central Valley, 100 percent of all tomatoes are grown using bushes, while most Southern California coastal counties practice the pole method.

	Bush-Harvesting	Pole-Harvesting
Temperature	70-80 F (High: 100 F; Chilling: 50 F)	Same as bush
Soil	Clay and loam (produce most plentiful crops); in wet areas, sandy soils	Same as bush
Vines	"Determinate," short; bushes without support	"Indeterminate," long, climbing; supported by stakes
Planting	Seeds planted on raised beds, single row, 18" apart	In beds 5'-6' long, single row, 18" apart; stakes posted every 2'-3'
Fruits	Develop from flower ovaries (like berries); either bilocular or multilocular	Same as bush
Harvesting	Hand-harvested at mature green fruit stage about 80 to 110 days after planting; picked total 1-2 times	Hand-harvested as vine-ripe for 70 to 120 days or longer; picked 1-3 times per week
Common varieties	Shady Lady, Sunbrite, Roma, QualiT 21, Merced, Sonnet	Bingo, Merced, Tango, Celebrity

For more information, visit:
http://anrcatalog.ucdavis.edu/pdf/8017.pdf



Adapted from: *Hot as a Pepper, Cool as a Cucumber,* Meredith Sayles Hughes, 1999. To download reproducible botanical images, visit the *Educators' Corner* at **www.harvestofthemonth.com**.

Cafeteria Connections

- Ask school nutrition staff to offer different salsas when serving tacos, taco salad, or burritos; also suggest including salsa in the baked potato and garden bar.
- Conduct a survey during the lunch hour asking students about their favorite ways to eat tomatoes.
- Select a team of *Student Advocates* (page 4) to help identify local tomato growers or distributors who can sell tomatoes to the school/ district. Share list with school nutrition staff.

Adapted from:
"Food Works," Team Nutrition, 1995.

A Slice of Tomato History

- The first tomatoes can be traced back to the Andes in Peru, where they grew wild as cherry-sized berries. As early as 700 A.D., the Incas and Aztecs began cultivating tomato plants.
- Mexico's Aztecs and Mayans gave the tomato its name, first "xitomatle," then "tomatle" or "tomati."
- In the mid-1500s, Spanish conquistadors carried tomato seeds back to Europe, where they were embraced in Italy, Spain, and Portugal.
- In 17th and 18th century England, tomatoes were believed to be poisonous. (Eating the stems and leaves may cause illness and should be avoided.)
- Thomas Jefferson was one of the first Americans to grow tomatoes at his Virginia home as early as 1781. By 1812, tomatoes were gaining in popularity among Louisiana Creoles who used them in jambalayas and gumbos and Maine cooks who added them to seafood dishes.
- In the 1893 U.S. Supreme Court case of "Nix v. Hedden," the tomato was declared a vegetable, along with cucumbers, squashes, beans, and peas. This came about as a result of tariff laws in 1887, which imposed a duty on vegetables but not fruits.
- George Washington Carver believed tomatoes had "medicinal virtues." After World War I, he issued "115 Ways to Prepare It [Tomatoes] For the Table" thus marking the introduction of the tomato into popular culture.

For more information, reference:
Growing Vegetables California Style, Marsha Prillwitz, 1988.
www.cfaitc.org/factsheets/pdf/ProcessingTomato.pdf
http://aggie-horticulture.tamu.edu

Physical Activity Corner

To achieve optimal learning in the classroom, studies show that students need to activate their minds and bodies. Here is a quick (5-10 minute) activity that you can do with your students to help energize their bodies.

Have students pretend they are on a trip to the farm and move their bodies to each prompt (spend 30 seconds to one minute on each activity).

1. Climb the apple tree.
2. Walk through the tall corn fields.
3. Squat down and pick up the pumpkins and load them in the truck.
4. Pull carrots from the ground.
5. Reach for oranges on the tree.
6. Bend down and pick up tomatoes to put in your basket.
7. Push the wheelbarrow of hay.
8. Run to open the gate for the cows.
9. Swim like a fish in the pond.
10. Dig holes to plant potatoes.

For more information, visit:
www.cde.ca.gov/ci/pe/cf/

Home Grown Facts

- California is the nation's tomato capital. Ninety-five percent of processing tomatoes and about 75 percent of all tomatoes are grown in California.
- Tomatoes are grown throughout the state, but about 90 percent of California grown tomatoes are harvested in nine counties.
- The largest fresh-market tomato producing counties are: Fresno, Merced, San Joaquin, San Diego, Kern, Stanislaus, Kings, Tulare, and Sacramento.

For more information, visit:
www.cfaitc.org
www.cdfa.ca.gov

Student Champions

- Visit local grocery stores. Find out if the store buys/sells fresh tomatoes that are grown by local farmers (or in California), out-of-state, or abroad?
- If the store does not purchase tomatoes from local growers, find out why not.
- Propose options for stores to consider purchasing tomatoes from local or regional growers.
- Ask stores for tomato plant donations for school garden or classroom.

School Garden: Tomatoes Galore

If your school has a garden, here is an activity you may want to implement. Look for donations to cover the cost of seeds, tools, irrigation systems, electric pumps, and any salary incurred by garden educators or others.

- Select a colorful variety of tomatoes from the school garden, farmers' market, or supermarket.*
- Download the botanical image (page 3) and CFAITC's Tomato Life Cycle image.** Discuss the growing process for tomato plants. Have students identify parts of the plant and tomato.
- Have students look up the nutrition information for each variety. (Hint: search **www.nal.usda.gov/fnic/foodcomp/search/**.)
- Compare the different nutrients in each variety. Discuss why different varieties (and different colored tomatoes) have different nutrients.

*Suggested varieties: roma, heirloom, cherry tomatoes, better boy tomatoes, beefsteak tomatoes, etc.

Download botanical image from **www.harvestofthemonth.com. Download CFAITC image from **www.cfaitc.org/LessonPlans/pdf/610.pdf**.

Literature Links

- **Elementary:** *Tomatoes from Mars* by Arthur Yorinks, *Tomatoes* by Elaine Landau, and *I Will Never Not Ever Eat a Tomato* by Lauren Child.
- **Secondary:** *Carrots Love Tomatoes: Secrets of Companion Planting* by Louise Riotte.

For more ideas, visit:
www.cfaitc.org/trg/pdf/trg2009.pdf

Adventurous Activities

Many factors affect agricultural production. Techniques like selective breeding, genetic engineering, and more efficient farming practices have allowed growers to produce crops that are more plentiful, safer for the environment, more nutritious, and better tasting. Research how tomato production has evolved with advancing technology.

Source: "Catch Up on Tomato Technology," CFAITC, 2001.

This material was produced by the California Department of Public Health's *Network for a Healthy California* with funding from USDA SNAP, known in California as CalFresh (formerly Food Stamps). These institutions are equal opportunity providers and employers. CalFresh provides assistance to low-income households and can help buy nutritious foods for better health. For CalFresh information, call 1-877-847-3663. For important nutrition information, visit www.cachampionsforchange.net.