

# HOTM Rotation for the 2015-2016 School Year

Fall		Suggested variety
September	Peppers	Sweet Peppers
October	Grapes	
November	Root Vegetables	Daikon Radish
Winter		
December	Apples	
January	Salad Greens	Red Leaf Lettuce
<b>February</b>	Citrus	Mandarins
Spring		
March	Cooked Greens	Bok Choy (featured raw)
April	Cucumbers	Persian
<mark>May</mark>	<b>Strawberries</b>	
Summer		
June	Stone Fruit	Peaches
July	Avocados	
August	Melons	

Compiled by NEOP partners from the following agencies:

- Orange County Department of Education
- Los Angeles County Department of Public Health
- Los Angeles County Office of Education
- County of Riverside Department of Public Health
- San Bernardino County Superintendent of Schools
- University of California, San Diego, School of Medicine, Department of Pediatrics, Division of Child Development and Community Health
- Southern California Farmers



This material was produced by the California Department of Public Health's Nutrition Education and Obesity Prevention Branch with funding from USDA SNAP-Ed, known in California as CalFresh. These institutions are equal opportunity providers and employers. CalFresh provides assistance to low-income households and can help buy nutritious food for better health. For CalFresh information, call 1-877-847-3663. For important nutrition information, visit www.CaChampionsForChange.net.





# **Nutrition Facts**

Serving Size: ½ cup raw jicama,		
sliced (60	g)	
Calories 23 Calo	ories from Fat 0	
	% Daily Value	
Total Fat 0g	0%	
Saturated Fat 0g	0%	
Trans Fat 0g		
Cholesterol 0mg	0%	
Sodium 2mg	0%	
Total Carbohydrate 5g	2%	
Dietary Fiber 3g	12%	
Sugars 1g		
Protein 0g		
Vitamin A 0%	Calcium 1%	
Vitamin C 20%	Iron 2%	

# ROOT VEG<u>ETABLES</u>

# **Health and Learning Success Go Hand-In-Hand**

Encouraging students to try new foods through taste tests is a great classroom strategy. Create a safe environment for students to taste new fruits and vegetables. A low-pressure approach to taste testing can help students develop a sense of what they like. Incorporate *Harvest of the Month* fruits and vegetables into lesson plans and help students expand their eating horizons.

# Exploring California Root Vegetables: Taste Testing

#### **Getting Started:**

 Partner with your school nutrition staff, local farmers' market, or grocery store to obtain produce for taste tests.

#### What You Will Need (per group):

- 1/2 cup each of raw, peeled, and sliced jicama and turnips
- 1/2 cup each of cooked\* and sliced russet potatoes and rutabagas
- Printed Nutrition Facts labels for jicama, turnips, potatoes, and rutabagas\*\*

#### Activity:

- Record sensory impressions by creating a Venn diagram on the board.
- Taste vegetables and note the look, texture, smell, color, and taste.
- Ask students to write a reflection or thank you letter to the farmer or school nutrition staff. Include sensory descriptions or reasons why they liked or disliked certain items.
- Examine Nutrition Facts labels for all items. Discuss how they differ nutritionally.
- Refer to Botanical Facts (page 2) and explain how tubers differ from roots.
- \*Make arrangements to cook (steam) potatoes and rutabagas in advance. \*\*Download from the Educators' Corner of **www.harvestofthemonth.com**.

#### For more ideas, reference:

Kids Cook Farm-Fresh Food, California Department of Education, 2002.

#### Cooking in Class: Jicama Cucumber Salad Ingredients:

#### Makes 24 tastes at 1/4 cup each

- 1 pound jicama, peeled and cut into ½-inch cubes
- 2 medium cucumbers, quartered, and sliced ¼-inch thick
- 1 fresh lime
- 3 teaspoons chili powder
- Small plates and forks

1. Combine jicama and cucumbers in a large bowl.

2. Squeeze lime juice over salad and mix well.

3. Sprinkle seasoning over salad and mix well. Serve immediately.

Source: Hawthorne School District, 2009.

For nutrition information, visit: www.harvestofthemonth.com.

# Reasons to Eat Root Vegetables

- A ½ cup of most root vegetables provides an excellent source of vitamin C.
- A <sup>1</sup>/<sub>2</sub> cup of sliced jicama is a good source of fiber.
- Complex carbohydrates\* (commonly referred to as "starches") are a key nutrient in root vegetables.

\*Learn about complex carbohydrates on page 2.

# Champion Sources of Complex Carbohydrates\*

- Corn
- Dry beans
- Peas
- Sweet potatoes

\*Champion foods include those in which most of their calories come from complex carbohydrates.

Source: USDA Nutrient Database

For more information, reference:

Wellness Foods A to Z by Sheldon Margen, Rebus, 2002.

## What Are Complex Carbohydrates?

- "Starchy vegetables" provide calories in the form of complex carbohydrates. They also provide vitamins, minerals, and fiber.
- The primary function of carbohydrates is to provide energy for the body, especially the brain and nervous system.
- Most people should get 55-60%, or over half, of their total calories from carbohydrates, preferably starches and naturally occurring sugars.
- Complex carbohydrates are made of polysaccharides (long chains of sugar units) that come from plant-based foods.
- The body uses enzymes to break down complex carbohydrates like starch into glucose, which the body then uses for energy.
- In plants, starch is produced by photosynthesis. Tubers store the highest quantities of starch of all vegetables.

**Source:** *Understanding Normal and Clinical Nutrition* by Catalog, Whitney, and Rolfes, Sixth Edition, 2002, pp. 97, 114-117.

For more information, visit: www.fruitsandveggiesmatter.gov

### How Much Do I Need?

A <sup>1</sup>/<sub>2</sub> cup of sliced root vegetables is about one cupped handful. Root vegetables come in a variety of colors and most can be eaten raw or cooked. The amount of fruits and vegetables you need depends on your age, gender, and physical activity level. Remind students to eat a variety of colorful fruits and vegetables throughout the day. It will help them reach their recommended daily amounts.

# Recommended Daily Amounts of Fruits and Vegetables\*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> ⁄ <sub>2</sub> - 5 cups per day	4 <sup>1</sup> / <sub>2</sub> - 6 <sup>1</sup> / <sub>2</sub> cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 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.

### **How Do Root Vegetables Grow?**

Root vegetables are cool-weather crops. Roots such as beets, carrots, radishes, rutabagas, and turnips can be planted in early spring and late summer for two crops. Tubers are a single-crop vegetable that can take up to one year to harvest. Roots need to be thinned so they have enough room to develop properly. Tubers do not require thinning, but they do need plenty of space and soil covering the underground vegetables.

For a chart with information about how to plant and grow root vegetables, refer to *Root Vegetables Botanical Images* (in the Educators' Corner) on **www.harvestofthemonth.com**.

#### For more information, visit:

www.ncsu.edu/sustainable/profiles/pppotato.html www.urbanext.illinois.edu/veggies/potato1.html

# **Botanical Facts**

Root vegetables are the roots of plants that are eaten as vegetables. These roots grow into the ground from the base of the plant stem. They anchor the plant, absorb water and nutrients, and store energy. Root vegetables are divided into six subgroups: Tap Roots, Tuberous Roots, Corms, Rhizomes, Tubers, and Bulbs.

Tubers differ from other roots in that they are swollen underground stems, capable of producing new plants and storing energy for the parent plant. If the parent plant dies, the underground tubers can create new plants. Other roots can take nutrients from the ground, but cannot store energy or use it for reproduction. So while every tuber is a root vegetable, not all roots are tubers.\*

Subgroup	Varieties
Tubers	Potato, sunchoke, yam
Tap Roots	Beet, carrot, cassava, jicama, parsnip, radish, rutabaga, turnip
Tuberous Roots	Sweet potato, yucca
Corms	Celeriac, eddo, taro, water chestnut
Rhizomes	Arrowroot, galangal, ginger, ginseng, lotus root, turmeric
Bulbs	Garlic, onion, shallot

\*Refer to *Carrots, Potatoes,* and *Sweet Potatoes* newsletters for more information about root vegetable varieties.

#### For more information, visit:

http://aggie-horticulture.tamu.edu/extension/specialty



# School Garden: To Dig or Not to Dig?

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.

Demonstrate the importance of planting in loosened soil. In compacted or dense soil, there is less room for air, making it difficult for water to drain.

#### Materials:

- 20 root seeds of same variety (e.g., turnips, parsnips)
- 4' x 8' unprepared garden area (i.e., soil is hard)
- String
- Markers
- Spading forks

### **Student Activity:**

- Divide garden area in half using string.
- Label one side "Bed A." Use forks to loosen soil to six inches deep.
- Label the other side "Bed B." Leave it untouched.
- Plant equal number of seeds in Beds A and B. Record predictions about growth and harvesting in a journal.
- Harvest mature plants and taste the edible parts.
- Write an analysis of which bed was more suitable for plant growth and why. Compare it to original predictions. Complete Student Sleuths #5.

Adapted from: The Growing Classroom: Garden-Based Science by Roberta Jaffe and Gary Appel, Addison Publishing Company, 1990.

# **Home Grown Facts**

- Jicama is not commercially grown anywhere in the United States.
- California leads the nation in production of Daikon radishes.



 Turnips are produced mainly as a small (approximately 400 acres)

commercial crop in Kern and Imperial counties.

In California, parsnips are grown mainly in home gardens.
 Source: www.agcensus.usda.gov/Publications/2007/Full\_Report/
 Volume\_1,\_Chapter\_1\_State\_Level/California/st06\_1\_034\_034.pdf

### **Student Activity:**

California imports produce from other states or countries. Locally grown foods, especially fruits and vegetables, are likely to be fresher and taste better than foods shipped from out-of-state.

- Find more information about farmers' markets and local growers near you by visiting www.ams.usda.gov. (Select "Wholesale and Farmers Markets" under "Browse by Subject.") Or, visit www.localharvest.org.
- At your local market, ask the produce manager where the store buys its produce.

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

# Student Champions

Form a Nutrition Advisory Council to promote nutrition and school meals to student peers.

 Collaborate with school nutrition staff to create a taste testing event, make seasonal produce suggestions, or develop a standardized menu that complies with USDA school meal nutrition guidelines.



#### For more information, visit: www.calsna.org/NAC/NAC.asp

www.fns.usda.gov/cnd/menu/menu\_planning.doc

# Student Sleuths

- 1 Complex carbohydrates, like those found in starch, provide the body with longer releasing energy. How does this differ from the energy provided by simple carbohydrates?
- 2 What is a root? What is a tuber? List examples of each.
- 3 Sweet potatoes (a root) are a good source of potassium. (USDA defines a "good source" as supplying at least 10% daily value of a nutrient per serving.) List three other fruits or vegetables that are good sources of potassium.
- **4** What is the difference between annual and perennial plants?
- 5 How do soils become compacted? What happens when the soil becomes compacted? How can we avoid compacting our garden beds?

#### For information, visit:

www.fruitsandveggiesmatter.gov

www.nal.usda.gov/fnic/foodcomp/search

www.extension.umn.edu/distribution/cropsystems/components/ 3115s01.html

www.garden.org

# A Slice of Root Vegetable History

- Root vegetables were an essential part of the diet during the early evolution of humankind (about five million years ago).
- Turnip fossils were found in caves in China dating back thousands of years.
- Jicama was brought to the Philippines and Malaysia by the Spanish in the 1600s.
- Rutabagas are believed to have originated in Bohemia in the 1700s as a cross between the turnip and wild cabbage.
- American colonists relied heavily on root vegetables because they could be stored for months in the harsh New England winters.

#### For more information, visit:

www.idph.state.ia.us/pickabettersnack/common/pdf/factsheets/ potatoes.pdf

www.ba.ars.usda.gov/hb66/078jicama.pdf

# **Adventurous Activities**

#### **Math Analysis**

Compare and contrast the content of predominant nutrients – including vitamins and minerals – in different root vegetable varieties (e.g., jicama, parsnips, rutabagas, turnips, yams, sweet potatoes, potatoes).

#### Helpful Hint:

Complete in conjunction with *Taste Testing* activity on page 1.

#### For information, visit:

www.nal.usda.gov/fnic/foodcomp/search

## **Cafeteria Connections**

- Examine the school lunch menu. List the different choices of root vegetables. Have students design posters promoting the nutritional significance of a root vegetable of their choice. Display posters in cafeteria.
- Ask students to select which root vegetables they will try. Record feedback and submit summary to the school nutrition staff with recommendations.
- Promote lunch time as a way for students to obtain maximum nutrition and help meet their daily fruit and vegetable needs. Design promotional messages around fruits and vegetables served that week.

#### For more ideas, visit: www.schoolnutrition.org



## **Activities & Resources Galore**

Visit the Educators' Corner online for more resources:

- Cooking in Class (recipe analyses, cooking tips)
- Reasons to Eat (Nutrition Glossary)
- How Does It Grow (botanical images, growing tips)
- Student Sleuths (Answer Key)
- Adventurous Activities
- Literature Links (book lists)
- Links to California Content Standards (all grades)

All available at www.harvestofthemonth.com.

# **Just the Facts**

- Only the roots of jicama plants are edible.
- Turnips are members of the mustard family.
- The name *rutabaga* comes from the Swedish word *rotbagga*, meaning "thick root."
- The word *Daikon* comes from two Asian words: *dai* (large) and *kon* (root).

#### For more information, visit:

www.uga.edu/rootandtubercrops www.panen.psu.edu/s.n.a.c

# **Literature Links**

- Research the history of turnips and rutabagas in Irish, Scandinavian, and Russian cultures.
- Talk with a local dietitian to identify valid resources for nutrition information. Discuss popular beliefs about carbohydrates and resolve myths and facts.
- If allowed, conduct a taste test in a school library. Have the librarian present literature, such as a book related to food and/or nutrition.

#### For a list of book ideas, visit:

www.harvestofthemonth.com

# **Physical Activity Corner**

Form a "walking school bus" to promote physical activity. For ideas on how to start a walking school bus, visit www.walkingschoolbus.org. A healthy lifestyle consists not only of a healthy overall diet, but also plenty of physical activity. The recommended amount of physical activity for children is 60 minutes on most days and 30 minutes for adults.

For more information, visit: www.cawalktoschool.com











# **Nutrition Facts**

Serving Size: ½ cup app Calories 28 Calo	les, sliced (55g) ories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 1mg	0%
Total Carbohydrate 8g	3%
Dietary Fiber 1g	5%
Sugars 6g	
Protein 0g	
Vitamin A 1% Vitamin C 4%	Calcium 0% Iron 0%

# Health and Learning Success Go Hand-In-Hand

Increasing fruit and vegetable consumption tends to increase academic performance in undernourished children. Harvest of the Month connects with core curricula to give students the chance to explore, taste, and learn about the importance of eating fruits and vegetables. It links the classroom, cafeteria, home, and community to help students make healthy food choices and be physically active every day.

### **Exploring California Apples: Taste Testing** What You Will Need (per group of 6-8 students):

- 3-5 apples (each in a different variety\*), sliced\*\*
- Graph paper and colored pencils

\*Refer to Home Grown Facts on page 3 for varieties.

\*\*To prevent browning, keep sliced apples in 100% apple juice until start of activity.

#### **Activity:**

- Observe, touch, smell, and taste each apple variety.
- Develop a color graph using appearance, texture, smell, flavor, and sound.
- Compare and contrast the varieties.

#### For more ideas, reference:

School Foodservice Guide – Successful Implementation Models for Increased Fruit and Vegetable Consumption, Produce for Better Health Foundation, 2005, pp. 39-42.

# **Cooking in Class: Apple Oatmeal**

#### Makes 36 tastes at 1/4 cup each. Ingredients:

- 3 large apples, cored
- 3 cups quick cooking oats
- 1/2 tablespoon ground cinnamon
- 3% teaspoon salt
- 5¼ cups 100% apple juice
- Small cups and spoons
- 1. Chop apples into bite-sized chunks.
- 2. Combine apple chunks, oats, cinnamon, salt, and apple juice in a large microwave-safe bowl. Cover bowl with lid or plastic wrap. Leave a little opening for steam to get out.
- 3. Microwave on high for 3-4 minutes, stirring once after 2 minutes.
- 4. Stir and let cool 1 minute before servina.

Nutrition information per serving: Calories: 52, Carbohydrate 11 g, Dietary Fiber 1 g, Protein 1 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 26 mg

Adapted from: Kids...Get Cookin'!, Network for a Healthy California—Children's Power Play! Campaign, 2009.



# **Reasons to Eat Apples**

- A <sup>1</sup>/<sub>2</sub> cup of sliced apples is a source of fiber. Dietary fiber is a complex carbohydrate. There are three main types of carbohydrates: starch, fiber, and sugar.\*
- Eating a variety of colorful fruits and vegetables throughout the day will help you meet the recommended daily values of nutrients that your body needs to be healthy.
- Apples can be eaten in a variety of forms - as whole (fresh), unsweetened applesauce, dried apples, or 100% apple juice.
- \*Learn about sugar on page 2.

#### **Champion Sources of Fiber\*:**

- Beans
- Blackberries
- Dates
- Pumpkin

- Whole wheat bread

\*Champion foods provide a good or excellent source of fiber.



# APPLES

nny Smith

- Peas
- Raspberries
- Whole wheat cereal

# What is Sugar?

- Carbohydrates are the body's main source of energy. There are three kinds of carbohydrates: starch, fiber, and sugar.
- Sugar is found only in foods of plant origin. In food, sugar is classified as either naturally occurring or added.
- Naturally occurring sugars include lactose in milk and fructose in fruit, honey, and vegetables.
- Added sugars (white, brown, powdered, and corn syrup) are originally made from sugar beets, sugar cane, corn, and grapes.
- Naturally occurring sugars (except honey) are usually found in foods along with vitamins and minerals, while added sugars provide calories and very few vitamins and minerals. Therefore, added sugars are often called empty calories.

For more information, visit: http://food.oregonstate.edu/learn/sugar.html

# **How Much Do I Need?**

A ½ cup of sliced apples is about one cupped handful. This is about the size of half of a small apple. The amount of fruits and vegetables each person needs depends on age, gender, and physical activity level.

#### Activity:

Visit **www.choosemyplate.gov** and have students determine how many cups of fruits and vegetables they need to eat every day. Have students write down their goals and make a daily log for tracking how many fruits and vegetables they eat each day.

#### Recommended Daily Amount of Fruits and Vegetables\*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	4 <sup>1</sup> / <sub>2</sub> - 6 <sup>1</sup> / <sub>2</sub> cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 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.

# **How Do Apples Grow?**

Apple trees grow in the temperate regions of the world. Apple trees are best adapted to places where the average winter temperature is near freezing for at least two months, though many varieties can withstand winter temperatures as low as -40 F.

Apple trees are deciduous. In late spring, white blossoms appear from the tiny buds on apple tree branches for about nine days and produce pollen and nectar. Bees help to cross-pollinate the blossoms, the first step in forming an apple.

The seeds are distributed among an apple's five seed chambers, called carpels, found near the core. Seed development stimulates the apple tissue development. Apples continue to grow until late summer when they are ready to harvest and eat.

# **Botanical Facts**

Pronunciation: ăpel Spanish name: manzana Family: Rosaceae Genus: *Malus* Species: *M. domestica* 



Apples are the fruit of plants of the genus *Malus* in the family Rosaceae

(rose family). Domestic or table apples are of the species *M. domestica* and are one of the most widely cultivated tree fruits.

*Malus sieversii* is the wild ancestor of *M. domestica*, and its trees can still be found in the mountains of Central Asia. In fact, the former capital of Kazakhstan, *Almaty*, means "father of the apple." Wild apples (common name for *M. sieversii*) resist many diseases and pests that affect domestic apples, and they are often researched and used in the development of new disease-resistant apples.

For more information, visit: www.urbanext.uiuc.edu/apples/

# **A Slice of Apple History**

Apples have existed for the length of recorded history and are believed to have originated in the Caucasus, a mountainous area between what are now the Black and Caspian Seas.

Through the rise of Greece, the fall of Persia and migrations to Rome and Europe, apples were cultivated and — through a process called grafting, which produces new varieties — disseminated throughout various cultures. Apples experienced surges of popularity and, at one point, some varieties were nearly lost, but were saved due to traditional orcharding by the English church.

Apple growing arose again in 15th century Renaissance Italy. Eventually, France and England followed suit, and the fruit remained popular in Europe well into the 1800s, when European settlers brought apples with them to the Americas to share the cultivation and traditions.



www.usapple.org/educators/applestore/4-6guide.pdf

# **Physical Activity Corner**

Healthy nutrition is only one part of the equation to achieving optimal learning in the classroom; physical activity is another important part. Children need at least 60 minutes of physical activity every day to stay fit both mentally and physically. Commit to playing a different game or activity, like *Grab the Apple!*, each week in or out of the classroom.

#### Grab the Apple!

#### **Objective:**

Develops listening and fine motor skills (reflexes)

#### Equipment:

- One "apple" (foam ball or bean bag) for each pair of students
- Whistle or music

#### **Preparation:**

- Pairs sit cross-legged on floor facing each other, hands on knees
- Place box, with apple on top, between pairs
- Use START (whistle/music) cue to lead activity

#### **Activity:**

- On START cue, grab the apple before partner
- Variations:
  - Call out a specific hand to grab the apple
  - Start with hands on shoulders
  - Start in sit-up position (on back, knees bent)
  - Start in push-up position (on stomach, face down)

#### Go Farther:

Ask students to think of different starting positions to try.

#### Bring It Home:

Encourage students to play *Grab the Apple!* with family members.

#### For more ideas, visit: www.sparkpe.org

# **S**tudent Sleuths

- 1 Why is fiber important?
- 2 Apples contain natural fructose. What is natural fructose and what are its benefits?
- 3 Why do apples float in water?
- **4** What does the color of an apple's skin tell you about the environment where it was grown?
- **5** Map the origin of the apple and various geographical regions in California where apples are grown.
- 6 List the top five varieties of apples commercially produced in California and the counties that grow them.
- 7 Determine how much of the apples harvested in California go into processed foods/juices and how much is sold whole/fresh.

#### For information, visit: www.calapples.org www.usapple.org www.fruitsandveggiesmatter.gov/month/apple.html

# **Cafeteria Connections**

Have students investigate what types of apples are used in the cafeteria. Talk with the school nutrition staff to find out why these varieties are selected. Then, write letters to the school nutrition staff promoting the benefits of locally grown apples (cost, flavor, etc.).

#### For more ideas, reference:

Fruits and Vegetables Galore, USDA, 2004. www.nal.usda.gov/kids www.agclassroom.org

# School Garden: Savvy Seeds

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.

As fall weather spells an end to some school gardens, encourage students to become seed detectives by identifying, collecting, and saving their own seeds from the garden or in the wild. Some fruits and vegetables to consider: melons, tomatoes, beans, peas, peppers, pumpkins, squash, and corn.

#### **Class Discussion**

- How do plants grow from seeds?
- What nutrients do plants need for optimal growth?
- Compare plant nutrients with the nutrients humans need. Explain why it is so important for us to eat plenty of plant foods, especially fruits and vegetables.

#### For more ideas, visit:

www.kidsgardening.com

### **Home Grown Facts**

- The apple industry in California dates back to the 1800s, when two early orchards were cultivated in Watsonville and Sebastopol along the Central and Northern coastal regions. Today there are more than 450 growers.
- California ranks fifth in commercial apple production in the United States — an impressive accomplishment achieved in about 25 years of serious production.
- California is known for its variety of apples and continual production of new varieties. Examples include the Red Delicious, Golden Delicious, Gala, Fuji, Granny Smith, McIntosh, Rome, Jonathon, and Pink Lady.
- California apples are harvested throughout the year and many varieties are available year-round.

#### For more information, visit:

www.calapples.org

## **Just the Facts**

- About 2,500 apple varieties are grown in the United States and more than 7,500 are grown worldwide.
- Apples are best when eaten with the peel, as that is where most of the fiber and antioxidants are found.
- Almost one-half of all apples consumed are not in their fresh form, but rather as applesauce, apple juice, and jellies or jams. Apples can even be used to replace fat and butter in baked goods. (Replace shortening or oils in baking with an equal volume of applesauce plus one-third of the oil called for in the recipe.)

#### Literature Links The Legend of Johnny Appleseed

Born September 26, 1774 in Massachusetts on the eve of the American Revolution, John Chapman became the legendary "Johnny Appleseed."

He spent almost 50 years of his life in the American wilderness planting apple orchards in Illinois, Kentucky, Pennsylvania, and Ohio.

Johnny Appleseed was known as a kind and generous man. Alone, he pioneered the frontier on foot, planting apple trees, and selling them to the settlers on the plains for a few pennies each, or even clothing. Some had no cash, and from those he accepted a simple promise: to pay at a later date. Few failed to keep their word.

Chapman died in 1845, but even after 200 years, some of his trees still bear apples.

Elementary literature on the life of Johnny Appleseed:

- The Story of Johnny Appleseed by Aliki (Aladdin, 1987).
- Folks Call Me Appleseed John by Andrew Glass (Doubleday, 1995).
- Johnny Appleseed: My Story by David Harrison (Random House, 2001).

#### For book lists, visit:

www.harvestofthemonth.com www.cfaitc.org

# **Adventurous Activities**

#### **Field Trip:**

Take students on an apple-picking field trip or even bring the field trip to the school. For more information on Farm to School programs, visit www.cafarmtoschool.org.

#### **Problem Solving:**

Use apples in math equations to demonstrate addition and subtraction of fractions.

#### **Creative Writing:**

Have students interview and document their parents' favorite apple stories, memories, and recipes.

#### **Science Investigation:**

Oxidation is the browning reaction that occurs when the atoms in an apple come in contact with air and lose electrons.

 Cut two apples in half. Pour one tablespoon of lemon juice over the first half. Pour one tablespoon of water over the second half. Pour one tablespoon of apple juice over the third half. Do not pour anything over the fourth half. Leave all four halves in a visible spot in the classroom. Have students note the differences in the browning after one hour to see which method works best and why.

#### For more ideas, visit:

www.usapple.org/educators/applestore/index.cfm

## **FITNESSGRAM®**

The FITNESSGRAM, a state-required Physical Fitness Test, is administered in spring for students in grades five, seven, and nine. The FITNESSGRAM is a set of tests designed to evaluate health-related fitness, with the goal of helping students establish lifetime habits of regular physical activity. Remind students that the FITNESSGRAM is not pass or fail, but the launching pad to a lifetime of health.

The FITNESSGRAM is designed to assess the three basic components of fitness:

- 1 aerobic capacity
- 2 body composition
- 3 muscle strength

Muscle strength is divided into four areas: abdominal strength and endurance; trunk extensor strength and flexibility; upper body strength and endurance; and overall flexibility.

Discuss with your class the importance of physical activity and encourage students to get more physical activity. Identify two activities you can do as a class regularly. Examples include:

- Jogging outside around the track or school
- 2 Doing jumping jacks in class for one minute
- **3** Taking stretch breaks after guizzes or exams

#### For more information, visit:

www.cde.ca.gov/ta/tg/pf www.cde.ca.gov/re/pn/fd/documents/pefrwk.pdf www.cdc.gov/nccdphp/dnpa/physical/index.htm

# Student Champions

- Have students gather their favorite nutritious apple recipes.\* Brainstorm ideas on how to incorporate apples into school breakfast and lunch menus. Have them meet with school nutrition staff to share their ideas.
- Ask students to note during their next trip to the grocery store where the apple displays are located. Are they in the front, back, or on the side? How many varieties do they have available?

\*Visit www.cachampionsforchange.net for a variety of nutritious recipes.











# **Nutrition Facts**

Serving Size: 1 cup gr lettuce.	een leaf shredded (36a)
Calories 5 Cal	ories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 10mg	0%
Total Carbohydrate 1g	0%
Dietary Fiber 1g	2%
Sugars 0g	
Protein 0g	
Vitamin A 53%	Calcium 1%
Vitamin C 11%	Iron 2%

# SALAD GREENS

# **Health and Learning Success Go Hand-In-Hand**

With California's bountiful summer harvest, it is a great time to demonstrate how students can eat a variety of colorful fruits and vegetables every day as part of a healthy, nutrient-rich diet. Research shows that school-based nutrition education promoting healthful eating and physical activity can improve academic performance. *Harvest of the Month* supports academic content standards to give students the chance to explore, taste, and learn about the importance of eating fruits and vegetables. It can support students in making healthy food choices.

### **Exploring California Salad Greens: Taste Testing** What You Will Need (per group of 3-4 students):

- 1 cup each of several varieties of washed California grown salad greens\*
- Printed Nutrition Facts labels\*\* for each variety
- Dry erase board and markers

\*See Home Grown Facts (page 3) for varieties.

\*\*Download labels from www.harvestofthemonth.com.

#### Activity:

- Make separate rows on board for each salad green variety. Label columns: appearance, texture, smell, sound, and flavor.
- Observe and taste the first variety and discuss its characteristics within group.
- Write sensory descriptions in appropriate column; repeat for each variety.
- Compare and contrast the Nutrition Facts labels for each variety.
- Take a poll to find out students' favorite variety. Share results with school nutrition staff.

#### For more ideas, reference:

School Foodservice Guide – Successful Implementation Models for Increased Fruit and Vegetable Consumption, Produce for Better Health Foundation, 2005, pp. 39-42.

# Cooking in Class: Caesar Salad Wrap

Makes 24 tastes at <sup>1</sup>/<sub>4</sub> slice each Ingredients:

- 1 head romaine lettuce, torn into bite-size pieces
- 4 tomatoes, chopped
- 2 tablespoons green onion, chopped
- 6 tablespoons reduced fat Caesar salad dressing
- 2 tablespoons Parmesan cheese
- 6 (10-inch) fat free flour tortillas
- Small plates or napkins
- 1. In a large bowl, combine all ingredients, except flour tortillas.
- 2. Place equal amounts of salad mixture in each tortilla.
- 3. Roll up tortillas and slice into quarters. Serve on plates.

Hint: You may need to prepare in two batches.

Nutrition information per serving: Calories 82, Carbohydrate 14 g, Dietary Fiber 1 g, Protein 3 g, Total Fat 2 g, Saturated Fat 1 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 191 mg

Source: Network for a Healthy California, 2011.

#### For more ideas, reference:

Kids Cook Farm-Fresh Food, CDE, 2002.

## **Reasons to Eat Salad Greens**

One cup of salad greens provides:

REDLE

- An excellent source of vitamin K\* (green leaf, red leaf, romaine, butterhead, and iceberg).
- An excellent source of vitamin A (green leaf, red leaf, romaine, and butterhead).
- A good source of folate (romaine and butterhead).
- A good source of vitamin C (green leaf).
- \*Learn about vitamin K on page 2.

#### Champion Sources of Vitamin K\*:

- Asparagus
- Avocado
- Brussels sprouts
- Celery
- Cooked greens
- Peas
- Salad greens
- Soybean

\*Champion sources provide a good or excellent source of vitamin K (at least 10% Daily Value).

#### For more information, visit:

www.nal.usda.gov/fnic/foodcomp/search/ (NDB No.: 11250, 11251, 11252, 11253, 11257)

### What is Vitamin K?

- Vitamin K is a fat-soluble vitamin.
- Vitamin K helps stop cuts and scrapes from bleeding too much and starts the healing process.
- Together with calcium, vitamin K helps build strong bones.
- Vitamin K may also help keep blood vessels healthy.
- Low levels or deficiency of vitamin K affects the body's ability to clot blood and may result in easy bruising and bleeding (such as nose bleeds). Deficiencies are rare and usually only result when the body does not absorb vitamin K from the intestinal tract.
- Our bodies store vitamin K only in small amounts, so it is essential to obtain vitamin K through the foods we eat. Leafy green vegetables are a major source of vitamin K.

Source:

http://lpi.oregonstate.edu/infocenter/vitamins/vitaminK/

# **How Do Salad Greens Grow?**

Lettuce is grown year-round, but since lettuce seeds germinate and grow best at lower temperatures, and can even withstand a moderate freeze, the peak harvest season is January through May.



Lettuce seeds are sown

thinly in rows or in wide-row bands about 18 inches to two feet apart to utilize garden space. Seeds are covered with no more than one-half inch of fine soil, which is kept moist for 10 to 14 days. About three to seven days after planting, lettuce emerges from the ground. Young roots typically lengthen to about two to three centimeters before the seedling begins to extend upward. The cotyledons (the leaf in the embryo that emerges, enlarges, and becomes green) are the first leaves to emerge from the ground, and their storage reserves are utilized for early development. The first true leaves emerge soon after the cotyledons sprout and the process of photosynthesis begins. Growers thin out the plants to allow good air circulation between the plants and help prevent foliar, or leaf, diseases.

All salad greens are harvested by hand. They are cut with a sharp knife near the base of the head and any damaged outer leaves are removed. Then they are usually packed in a box right in the field and shipped to market.

#### **Helpful Hint:**

Learn how to grow your own lettuce in the *School Garden* activity (page 3).

For more information, visit: www.calgreens.org

# **Botanical Facts**

Pronunciation: lĕt'əs Spanish name: lechugas variadas Family: Asteraceae Genus: Lactuca Species: L. sativa

Salad greens consist of hundreds of varieties of different lettuce, which is a temperate annual plant



Some varieties of *Lactuca*, like iceberg, have been specifically cultivated to remove the bitterness from their leaves. These types of lettuce (often called "crispheads") have a high water content, lighter colored leaves, and little nutrient value. Leaves with greater pigmentation contain more antioxidants and nutrients. According to the CDC, the four main types of lettuce are butterhead (e.g., boston, bibb), crisphead (e.g., iceberg), looseleaf (e.g., red leaf, green leaf), and romaine.

#### For more information, visit:

http://plantanswers.tamu.edu/publications/vegetabletravelers/ index.html

# How Much Do I Need?

One cup of salad greens is about two cupped handfuls. For kids, the recommended serving size for salad greens is one cup. For adults, the recommended serving size is two cups. The amount of fruits and vegetables that each person needs depends on age, gender, and physical activity level. Have students find out how much they need to eat and write down how they plan to meet the daily recommended amount. Take time each week to talk with students about their goals.

#### **Recommended Daily Amount of Fruits and Vegetables\***

		•
	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	4 <sup>1</sup> / <sub>2</sub> - 6 <sup>1</sup> / <sub>2</sub> cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	3 <sup>1</sup> / <sub>2</sub> - 5 cups per day

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





## **A Leaf of Salad Greens History**

As a cultivated crop, lettuce originated in or around the Mediterranean basin. Wild forms of lettuce in Egyptian tomb paintings and written accounts of lettuce that date back to 79 A.D. all support evidence that salad greens are one of the oldest known vegetables.

Lettuce was among the first vegetables brought to the New World by Christopher Columbus. At the start of the 20<sup>th</sup> century, the western



shipping industry took off, greatly expanding the crop's popularity and range. The early western shipping industry relied mostly on New York lettuce cultivars. However, a disorder called "brown blight" destroyed numerous early plantings and by 1922, the magnitude was great enough to prompt the USDA to assign a plant breeder, I.C. Jagger, to Southern California to develop disease-resistant cultivars.

Jagger used healthy plants and some that he found in the affected New York lettuce fields. He eventually released three cultivars under the name "Imperial," which remained popular until the late 1940s, when the first true iceberg lettuce was developed by T.W. Whitaker. Two types of iceberg lettuce, Great Lakes and Calmar, dominated lettuce production until 1975, when the USDA replaced Calmar with the Salinas group. Salinas remains the most commonly grown lettuce variety today.

For more information, visit: www.history.org/history/CWLand/resrch1.cfm www.calgreens.org

### **Home Grown Facts**

- California leads the nation in production of leaf lettuce, head lettuce, and romaine lettuce\*.
- Accounting for all varieties, lettuce was California's seventh largest commodity for the period of 2006-2008.
- In addition to the four main varieties (butterhead, romaine, red and green leaf), other California grown varieties include bok choy, bibb lettuce, cilantro, endive, escarole, iceberg lettuce, Italian parsley, kale, Napa cabbage, parsley, radicchio, and green and red cabbage.
- The counties of Monterey, Imperial, Fresno, San Benito, and Santa Barbara account for the highest percentage of California's lettuce production.

\*2008 Data

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



# **School Garden: Grow Your Own Salad**

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.

Growing salad greens in a school garden is easy and inexpensive, and can be done nearly any time from September through June\*.

#### What You Will Need:

- Variety of salad green seeds
- Large growing area
- Seaweed extract or compost tea

#### Activity:

- Till the soil thoroughly, breaking up clumps and removing stones and debris.
- Dig in plenty of compost and well-cured manure to ensure the best growing soil for each selected salad green variety.
- Plant seeds about two feet apart, depending on variety.
- Keep soil moist, but avoid watering in the evening.
- Mulch soil to conserve moisture and keep soil cool.
- Once plants have grown, feed every three weeks with seaweed extract or compost tea.
- Begin cutting lettuce leaves as soon as they are large enough for use in a salad (or other meals).
- Harvest butterhead, romaine, etc., when heads are firm and fully formed.

\*In cooler climates or during winter months, select a site that gets full sunlight. In warmer climates or summer plantings, select a site that gets partial sunlight.

#### For more ideas, reference:

A Child's Garden of Standards, CDE, 2004.

# **S**tudent Sleuths

- 1 Why are darker green lettuce leaves more nutritious than lighter green leaves? What is the difference in the nutrient content? How does iceberg lettuce's nutrient content compare to darker green varieties?
- **2** Describe how vitamin K plays a role in helping blood clot. How much vitamin K should you have in your diet for your age?
- **3** What are three things that the mineral manganese helps the body to break down?
- **4** Name three other vegetables that belong to the family Asteraceae.
- **5** What are four components of photosynthesis? What is an effect of photosynthesis?
- 6 Develop a pie graph depicting the percentages of the varieties of lettuce commercially grown in California.
- **7** Identify what percentage of all commercially produced lettuce varieties make up the bagged salad sold in the domestic marketplace.

#### For information, visit:

http://lpi.oregonstate.edu/infocenter/vitamins/vitaminK/ www.nal.usda.gov/fnic/foodcomp/search www.leafy-greens.org www.calgreens.org

# **Adventurous Activities**

# Science Investigation:

What You Will Need:

Two potted plants\*, masking tape, water

#### Activity:

- Using masking tape, label one plant "light" and other plant "no light."
- Put the "light" plant in a sunny window.
- Put the "no light" plant in a closet.
- Hypothesize how plants will react.
- Water both plants regularly.
- After two weeks, compare and contrast plants.
- \*Look for donations for plants.

#### **Research Writing:**

Based on results from the Science Investigation, assign a research and writing project about photosynthesis.

For more ideas, visit: www.agclassroom.org

# **Just the Facts**

- Americans eat about 30 pounds of lettuce every year. That's about five times more than in the early 1900s.
- In the United States, lettuce is the second most popular vegetable (behind potatoes).
- According to CalCHEEPS findings\*, green salad is the most commonly eaten vegetable by California children.
- The ancient wild relative of lettuce contained a sedative-like compound. Ancient Romans and Egyptians would take advantage of this property by eating lettuce at the end of a meal to help induce sleep.

\*Source: http://www.cdph.ca.gov/programs/cpns/Documents/REU-FruitsVegetables\_CalCHEEPS\_2009.pdf

# Student Champions

- Have students visit the produce section of a grocery store and interview the produce manager. Report back to class: how many different varieties of salad greens are available? What are the different ways they are sold (e.g., bagged, cut, salad bar)? Is the price different or the same for each variety?
- Have students create posters and cut-out materials with information about salad green varieties to post on the school salad bar. Students can also bring these materials to local restaurants and grocery stores to hang in their salad bars for customers.

# **Cafeteria Connections**

- Partner with school nutrition staff to challenge classes to create and promote a new salad for the school menu. Provide classes with a budget and the "Promotion Planner" from *Fruits and Vegetables Galore*. The goal is to develop a new "salad" that can be introduced through the cafeteria or snack bar.
- Encourage younger students to complete the Word Jumble activity on the Salad Greens Menu Slick and to sign their name. On a selected day, draw names during lunch. Selected students will help create a "salad" (with guidance from school nutrition staff) and will be acknowledged for their creation on the day it is served.

#### For more ideas, reference:

Fruits and Vegetables Galore, USDA, 2004.

#### Physical Activity Corner What You Will Need:

- 1 hula hoop per 3 students ("salad bowl")
- A variety of items to represent "salad ingredients" (scarves, small balls, beanbags, crumpled paper, etc.)

#### Activity:

- Scatter the hoops throughout the activity area.
- Divide students into groups of three at each hoop.
- Divide items equally between all hoops.
- Have students decide what vegetable each item represents.
- Students simultaneously begin collecting "ingredients" from other hoops; students can only take one ingredient at a time.
- Items must be placed, not thrown, and students cannot guard their hoop.
- After several minutes, stop play. Have groups count their items (skip this step to minimize competition), then redistribute items before starting play again.

Adapted from: www.catchinfo.org

# **Literature Links**

- Primary: Welcome to Our Vegetable Farm, Pyramid Publishing, How Groundhog's Garden Grew by Lynne Cherry, and Plants on My Plate by Cathy Smith.
- Secondary: Green Power: Leaf and Flower Vegetables by Meredith Sayles Hughes, Sell What You Sow by Erica Gibson, and Agricultural History by the University of California Press, Journals Division.



GREEN LE







# **Nutrition Facts**

Serving Size: ½ cup ta sections Calories 52 Ca	angerine, s (98g) lories from Fat 0	
	% Daily Value	
Total Fat 0g	0%	
Saturated Fat 0g	0%	
Trans Fat 0g		
Cholesterol 0mg	0%	
Sodium 2mg	0%	
Total Carbohydrate 13g	g 4%	
Dietary Fiber 2g	7%	
Sugars 10g		
Protein 1g		
Vitamin A 13%	Calcium 4%	
Vitamin C 43%	Iron 1%	

# **Health and Learning Success Go Hand-In-Hand**

The school environment plays an important role in feeding a child's body and mind and promoting lifelong healthy habits. Encourage students to eat breakfast. Students who eat breakfast perform better with increased attention span and memory. Use *Harvest of the Month* to introduce students to fruits and vegetables and promote daily physical activity. *Harvest of the Month* connects with core curricula and links the classroom, cafeteria, home, and community.

# Exploring California Mandarins: Taste Testing

#### What You Will Need (per group of 4 students):

- Three different varieties of mandarin oranges\*
  - Paper and pencils
  - Cutting board and knife

\*See Botanical Facts on page 2 for varieties.

#### Activity:

- Observe, feel, and smell each variety.
- Cut mandarins into quarters; observe differences in skin.
- Observe and record different tastes, colors, textures, and shapes.
- Discuss similarities and differences between varieties.
- Report observations to class and note preferences.

#### For more ideas, reference:

Fruits and Vegetables Galore, USDA, 2004.

### Cooking in Class: Mandarin Salad

# Makes 36 tastes at ¼ cup salad with 2 mandarin segments each

#### Ingredients:

- 10-ounces raw spinach, washed and drained
- 2 (15-ounce) cans mandarin oranges packed in 100% juice, drained
- ¼ cup reduced fat Asian Sesame dressing
- Small paper plates
- 1. Combine spinach, mandarins, and dressing in a bowl. Stir until thoroughly mixed.
- 2. Place ¼ cup of salad with two mandarin orange segments on each plate.
- 3. Serve immediately.

Nutrition information per serving: Calories 14, Carbohydrate 3 g, Dietary Fiber 0 g, Protein 0 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 23 mg

Adapted from: Tasting Trio Team, Network for a Healthy California, 2010.

#### For more ideas, visit:

www.cachampionsforchange.net

# **Reasons to Eat Mandarins**

# A <sup>1</sup>/<sub>2</sub> cup of mandarin orange sections is:

- An excellent source of vitamin C\*.
- A good source of vitamin A.
- A source of fiber and potassium.

\*Learn about vitamin C on page 2.

#### Champion Sources of Vitamin C\*:

- Bell peppers
- Broccoli
- Citrus fruits
- Cantaloupe
- Cauliflower
- Kiwifruit
- Mustard greens
- Strawberries

\*Champion sources provide a good or excellent source of vitamin C (at least 10% Daily Value).

#### For information, visit:

www.nal.usda.gov/fnic/foodcomp/search/ (NDB No: 09218)



MANDARINS

## What is Vitamin C?

- Vitamin C is a water-soluble vitamin necessary for growth and development.
- Vitamin C is found only in plants. The body does not make or store vitamin C, so it is important to eat foods with vitamin C every day.
- Vitamin C acts as an antioxidant. Antioxidants help prevent chemical damage to cells and can promote vision health, keep the immune system healthy, support cardiovascular health, and help lower the risk of some types of cancer.
- Citrus fruits, like mandarins, are sources of flavonoids (or bioflavonoids), known for their antioxidant properties and ability to increase levels of vitamin C within the body's cells, positively affect blood flow, and exhibit anti-allergy and anti-inflammatory effects.
- Vitamin C helps the body heal cuts and wounds and helps lower the risk of infection. It also helps keep the body from bruising and helps build the tissue that holds muscles and bones together.
- Vitamin C also helps the body absorb the iron found in foods.
- Too little vitamin C in the diet can cause dry and splitting hair, bleeding gums, easy bruising, and swollen and painful joints.

For more information, visit: www.nal.usda.gov/fnic/foodcomp/Data/Flav/Flav02-1.pdf

# **How Does Citrus Grow?**

Citrus plants are large shrubs or small trees distinguished for their shiny, evergreen leaves and fragrant blossoms. The flowers produce a fruit known as a *hesperidium*, a berry with a leathery rind surrounding pulp-filled segments. Most citrus trees blossom two to five years after planting. Citrus fruits can be left on the tree without becoming overripe and do not continue to ripen after being picked.

For a growing chart, refer to the *Mandarins Botanical Image* on **www.harvestofthemonth.com**.

#### For more information, visit:

http://aggie-horticulture.tamu.edu/citrus/mandarins.htm www.cfaitc.org



# **Botanical Facts**

Pronunciation: măn'də-rĭn Spanish name: mandarina Family: Rutaceae Genus: *Citrus* Species: *Citrus reticulata* The genus *Citrus* consists of three

primordial species, one of which is

e)\*. Mandarin oranges

the mandarin orange (*Citrus reticulata*)\*. Mandarin oranges are not oranges (*Citrus sinensis*) and to avoid confusion are often referred to as simply "mandarins." The name "tangerine" is used to refer to a variety of mandarins with a deep, orange-red color; they are derived from a mandarin cultivar that originated in Tangier, Morocco. While the two names are used interchangeably for commercial purposes, this is botanically incorrect.

There are different taxonomy systems in use to categorize the fruits within the *Citrus reticulata* species. The USDA adheres to the system that categorizes mandarins into three major cultivars (see chart).

Mandarin Cultivars	Marketed as	Popular California Grown Varieties of Cultivar
Common Mandarin	Mandarins and tangerines	Clementine, Honey, Sunburst, Dancy, Pixie
Satsumas	Satsuma or "Emerald Tangerine"	Kara, Owari, Silverhill (70 California varieties and 200 worldwide)
Mandarin Hybrids	Tangelos (tangerine- pomelo) and tangors (tangerine-orange)	Minneola tangelo, Sampson tangelo, Thornton tangelo, King tangor

\*Implement Adventurous Activities on page 4 to help students learn about the three Citrus species.

#### For more information, visit:

http://citrusvariety.ucr.edu/citrus/mandarins.html www.ers.usda.gov

# How Much Do I Need?

A <sup>1</sup>/<sub>2</sub> cup of mandarin orange (tangerine) sections is about the size of one medium fruit. This is about one cupped handful. Have students look up their daily recommended amount of fruits and vegetables based on their age, gender, and physical activity level. Have a class discussion about the different forms and meals in which students can consume fruits and vegetables to help them reach their daily goals.

#### **Recommended Daily Amount of Fruits and Vegetables\***

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	41/2 - 61/2 cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	3 <sup>1</sup> / <sub>2</sub> - 5 cups per day

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

# **Just the Facts**

- There is no waste in the processing of citrus fruits. The juice is used for fresh juice and refined into vinegars and syrups; the peel is used to make oils, marmalade, pectin, and citric acid; seeds are used to make oils.
- In 2005, about 68 percent of the nation's total citrus crop was processed (mainly for juice), but more than half of California's citrus crop was sold as fresh. California's dry climate allows for growth of fruits that are more aesthetically appealing.
- China is the leading grower of mandarins, producing more than half of the world's supply. The United States ranks seventh globally.
- Satsumas were once the most popular mandarin variety but are second now to Clementines.
- Clementines are available from November to January leading to their nickname as "Christmas Oranges."

#### Sources:

http://ucce.ucdavis.edu

http://faostat.fao.org/site/567/DesktopDefault.aspx? PageID=567#ancor

# **A Slice of Mandarin History**

- 2,200 B.C.E.: First known references of citrus fruits; the mandarin is native to Southeastern Asia and the Philippines.
- 1840: Willow-leaf and China mandarin varieties are imported by Italian consulate from Italy and planted in New Orleans; varieties later travel to Florida and then California by end of 19th century.
- 1882: King mandarin variety is sent from Southeast Asia to Citrus Research Center at UC Riverside.
- 1914: Clementines are introduced to California farmers after five years of study at UC Riverside.
- 1997: Harsh winter in Florida devastates domestic orange production; opens booming market to California Clementines.

#### For more information, visit:

www.hort.purdue.edu/newcrop/morton/ mandarin\_orange.html

# Student Sleuths

- Write a story describing the delivery of ripe citrus fruit from the farm to the consumer. Include information about the delivery and absorption of nutrients found in the citrus fruit in the human body, especially how these nutrients are used to keep the body healthy.
- 2 Using MyPyramid, determine how much vitamin C you need daily. Are you getting enough vitamin C? List foods you eat that are rich in vitamin C.
- 3 According to the USDA, there are three main citrus species and many hybrid cultivars. What are the three main species? What are the hybrid cultivars and what species were crossed to create these hybrids? (See *Adventurous Activities* on page 4 for follow-up activity.)
- 4 How are seedless citrus fruit trees developed?

### For information, visit:

www.cfaitc.org http://ucce.ucdavis.edu

# **School Garden: Planting Seeds**

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.

Did you know that you can start seeds for your garden at almost any time of the year? Starting seeds indoors is a good idea if it is winter and cold in your region. If it is not cold in your region, you can start growing winter seeds outside in the ground. If your school has a garden, think about seeds your class might like to start. If your school does not have a garden, then students can start seedlings in the classroom and take them home to plant. Complete this activity to help students learn how to start, plant, and grow seeds and about the many parts of a plant we eat.

#### Activity:

- Create a chart to show the season(s) and timing for starting the seeds of a few common vegetables.
- Label columns by the types of plants we eat\*: Root Plants, Flower Plants, Leaves, and Fleshy Plants.
- Label rows by the four seasons: Winter, Spring, Summer, Fall.
- Research\*\* and identify the different kinds of plants in each category (column) and insert them into the corresponding season.
- Older students can look up the vitamin A and C content for each vegetable and determine which season(s) provides the richest sources of nutrients.

\*Examples: beets, radishes, carrots, cauliflower, beans, corn, tomatoes, cucumbers, peas, cabbage, lettuce, chard, spinach, summer and winter squash.

\*\*Students can check with a local farmer or Master Gardener at the University of California Cooperative Extension. Visit www.mastergardeners.org to learn more.

#### For more ideas, visit: www.csgn.org

# **Home Grown Facts**

- California leads national production of fresh citrus and ranks second (behind Florida) in total citrus production.
- California is the nation's second leading grower of mandarins and leads domestic production of Clementines.
- Leading counties of mandarin production are Tulare, Riverside, San Diego, Imperial, and Ventura.
- Satsumas, Clementines, and Minneola tangelos are the state's top three mandarin varieties.

#### For more information, visit: www.cdfa.ca.gov www.nass.usda.gov



# Cafeteria Connections

#### Grades K-5:

- Select a book from Literature Links (bottom right).
- Invite school nutrition staff into the classroom to read to students and lead the Cooking in Class activity (page 1).
- . Conduct a follow-up student activity that complements the book and supports literacy and/or nutrition skills, such as:



- Ask students to draw themselves eating their favorite citrus fruit and list adjectives to describe fruit.
- Display students' artwork on bulletin board in cafeteria.

#### Grades 6-12:

- Have school nutrition staff work with students to research and develop nutrition labels for several types of citrus fruits.
- Ask students to develop marketing messages that promote consumption of citrus on the school menu.
- Display students' creations in cafeteria.
- See Literature Links on this page for books to support students' research.

# Physical Activity Corner

#### Safe Routes to School

Only 40 percent of California teens meet the minimum daily target for physical activity, and close to 74 percent of California youth are physically unfit. In the past 30 years, the number of children who walk or bike to school has declined from over 50 percent to fewer than 15 percent. A federal transportation bill created a Safe Routes to School program. Visit the Web site below to learn more.

- Poll students on how they get to/from school (e.g., walk, bike, bus, carpool).
- Discuss factors that influence how they get to/ from school (e.g., distance, parents, safety, lack of transportation).
- Encourage students to discuss what would increase students walking/biking to school.
- Discuss ways the school community can start a local Safe Routes to School program.\*

\*See Student Advocates activity above to encourage students to get started.

#### For more information, visit:

www.saferoutestoschools.org/resources.shtml#teachkids

# **Adventurous Activities**

### **Science Investigation:**

As students will learn in Student Sleuths (page 3), the USDA recognizes three species of the genus Citrus: the mandarin (C. reticulata), the citron (C. medica), and the pomelo (C. maxima). Within these species are dozens of sub-species, or cultivars, as well as natural and man-made hybrids. Common hybrids include the orange, grapefruit, lemon, lime, and tangelo. Discuss the taxonomy system and how fruits and vegetables are botanically classified. Then have students complete the following activity:

- Work in groups of three to six students.
- Develop a "new" citrus hybrid or other fruit.
- Describe fruit characteristics (e.g., reproduction, growth, color, seeds, texture).
- Classify fruit according to characteristics (from Kingdom . to Species).
- Present fruit and taxonomy chart to class.

#### For more activities, visit:

www.harvestofthemonth.com

# **Student Champions**

- Have students take quality photos of school meals and display on bulletin boards. Include the nutrition information for meals and provide comparisons with lunches from home or restaurants.
- Have students identify ways to make a more walkable community. Work with school leaders and community members to begin implementation of the Safe Routes to School program. Visit www.cawalktoschool.com or www.pbs.org/americaswalking for more ideas.

For more ideas, visit: www.schoolnutrition.org

# Literature Links

- Elementary: Harvest Year by Cris Peterson, What Grows from a Tree? by Lola Schaefer, and Tangerine by Colin Cheong.
- Secondary: All About Citrus and Subtropical Fruits by . Maggie Klein, Fruit Crate Art by Joe Davidson, and Sell What You Sow by Eric Gibson.

For more ideas, visit: www.cfaitc.org/books





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# **Nutrition Facts**

Serving Size: 1/2 cup cooked Swiss		
charc	l (88g)	
Calories 18	Calories from Fat 0	
	% Daily Value	
Total Fat 0g	0%	
Saturated Fat 0g	0%	
Trans Fat 0g		
Cholesterol 0mg 0 <sup>4</sup>		
Sodium 157mg		
Total Carbohydrate	4g 1%	
Dietary Fiber 2g 79		
Sugars 1g		
Protein 2g		
Vitamin A 107% Calcium 5%		
Vitamin C 26% Iron 11%		

# COOKED GREENS

# **Health and Learning Success Go Hand-In-Hand**

School meals are designed to provide the nutrition students need to be healthy and ready to learn! The Fresh Fruit and Vegetable Program is a great way for schools to provide healthy snacks to students during the school day. Consider leading your school in developing its own fruit and vegetable snack program. *Harvest of the Month* can support your efforts to show students how to make healthy food choices and be more active. For information on the Fresh Fruit and Vegetable Program, visit **www.fns.usda.gov/cnd**.

### Exploring California Greens: Taste Testing Getting Started:

 Contact school nutrition staff about cooking greens or conducting taste testing in cafeteria.

#### What You Will Need (per group):

- 1 cup each of 3-6 leafy green varieties\*, raw and cooked
- Paper and colored pencils
- Printed Nutrition Facts labels and botanical image\*\*

#### Activity:

- Make a chart to record observations for each raw and cooked variety: shape, color, smell, texture, and taste.
- Explore the look, smell, feel, and taste of raw leafy greens and cooked greens. Record observations in chart. Compare and contrast.
- Use botanical image to identify the parts of the raw leaf.
- Examine Nutrition Facts labels and discuss similarities and differences. Complete Student Sleuths (page 3) and report back to class.
- Complete Literature Links activity (page 4). Share drawings with library staff.
- Take a vote of the favorite cooked greens variety. Display results in cafeteria.
  \*See Botanical Facts on page 2 for varieties.

\*\*Download from www.harvestofthemonth.com.

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

#### Cooking in Class: Simmered Greens Ingredients:

#### Makes 32 servings at 1/2 cup each

- <sup>1</sup>⁄<sub>2</sub> cup olive oil
- 4 cloves garlic, minced
- 4 onions, chopped
- 2 cups chopped green onion
- 4 cups low-sodium vegetable broth
- 4 cups tomato juice
- 4 pounds greens (mixture of kale, mustard, collard, and turnip greens)
- Salt and pepper
- Small paper cups and forks

1. In large pot, sauté garlic and onions in oil.

- 2. Add broth and juice. Bring to a boil.
- 3. Add greens and seasonings.

4. Cover and cook on low heat for 35 minutes or until tender. Serve warm.

Source: Network for a Healthy California, 2009.

For nutrition information, visit: www.harvestofthemonth.com

## **Reasons to Eat Greens**

A <sup>1</sup>/<sub>2</sub> cup of most cooked green varieties provides:

- An excellent source of vitamin A, vitamin C, and vitamin K (bok choy, collards, kale, Swiss chard).
- An excellent source of folate (bok choy and collards).
- A good source of manganese (kale and Swiss chard).
- A good source of iron and potassium (Swiss chard).
- A good source of calcium (bok choy and collards).\*
- \*Learn about calcium on page 2.

#### **Champion Sources of Calcium:\***

- Almonds
- Fortified cereals
- Lowfat dairy foods
- Nopales (cactus leaves)
- Soybeans

\*Provide a good or excellent source of calcium.

Source: www.nichd.nih.gov/milk/prob/ calcium\_sources.cfm



### What is Calcium?

- Calcium plays a key role in teeth and bone health. In fact, more than 99 percent of the body's total calcium is found in the teeth and bones.
- Bones are the "calcium bank" for our bodies. Bones are living tissue constantly withdrawing and depositing calcium.
- Vitamin D is needed (from food and sunlight) to help us absorb calcium.
- Calcium also helps keep nerves healthy so that muscles can contract and blood can clot.
- As calcium need increases, the calcium absorption efficiency also increases (and vice versa).
- Calcium absorption declines with aging in both men and women.

For more information, reference: Dietary Reference Intakes, Institute of Medicine, 2006.

## How Much Do I Need?

A  $\frac{1}{2}$  cup of cooked greens is about the same as two cups of raw leafy greens. Leafy greens cook down considerably – from one-quarter up to one-eighth of the original volume.

The amount of fruits and vegetables you need depends on your age, gender, and physical activity level. All forms of fruits and vegetables count towards your daily amount. Leafy greens are available fresh, frozen, and canned and are just as nutritious when cooked.

# **How Do Cooking Greens Grow?**

Cooking greens are known as cool-season crops, but can be grown and harvested almost year-round. They are commonly used as fall and winter vegetables, as they grow best in cooler weather and can survive an occasional frost. Some varieties, like kale and collards, taste sweeter after a frost. These varieties, along with Swiss chard, also grow well in warmer, more humid climates and in poor soil. Well-drained, loam soil is ideal for most cooking greens.

For a chart with information on how to plant and grow cooking greens, refer to *Cooked Greens Botanical Images* on **www.harvestofthemonth.com**.

#### Helpful Hint:

Refer to Adventurous Activities on page 4.

For more information, visit: www.cfaitc.org/GardenGuide

# **Botanical Facts**

Cooking greens are leafy green vegetables, which are among the most widely grown vegetables. They are also known as *potherbs* and most varieties can be used either fresh or cooked. The term "leafy greens" refers to vegetables like lettuce, cabbage, endive, escarole, spinach, broccoli, collards, turnip greens, mustard greens, kale, Swiss chard, and bok choy. They are grown for their leaves and stems, though sometimes the stems are inedible.

Most varieties – like collards, kale, mustard greens, turnip greens, and bok choy – are part of the cabbage family (Brassicae). Other varieties, like Swiss chard, are related to the spinach family (Amaranthae). Young plants have small, tender leaves and a mild or sweet flavor (collards, Swiss chard, bok choy, kale). Mature plants have tougher leaves and a stronger flavor (mustard greens, turnip greens).

#### Activity:

 Use the chart below as a guide to make another chart with four different leafy green varieties. Fill in all of the fields (family, genus, species, etc.). Make a list of all the different species to which leafy greens belong.

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



Source: http://library.thinkquest.org/3715

	Bok choy	Collard	Kale	Swiss chard
Pronunciation	bäk-'choi	kŏl'ərd	kāl	swis-'chärd
Spanish	repollo chino	hojas de berza	col rizada	acelga
Family	Brassicaceae	Brassicaceae	Brassicaceae	Amaranthaceae
Genus	Brassica	Brassica	Brassica	Beta
Species	Brassica rapa	Brassica oleracea	Brassica oleracea	Beta vulgaris
Cultivar group	Chinensis, Pekinensis	Acephala	Acephala	Cicla
Other names	Pak-choi, snow cabbage, Chinese chard	<i>Coleworts,</i> Tree cabbage, non-heading cabbage	<i>Coles</i> or <i>caulis,</i> Borecole	Chard, Seakale, Spinach beet

# **School Garden: Parts of a Plant**

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.

Visit your school or neighborhood garden to study the parts of the plant.

- Choose a leafy green vegetable plant. Identify the parts: hypocotyl, cotyledon, stem, petiole, lateral bud, blade, and leaflet.
- Choose a fruit plant. Identify the parts: *root, stem, leaflet, fruit, bud,* and *blossom*.
- Compare and contrast fruit and vegetable plants.

#### **Helpful Hint:**

Fall is a great time to plant leafy greens like kale, collards, and spinach. Refer to *How Do Cooking Greens Grow?* (page 2) for growing information.

For more ideas, visit: www.csgn.org

### **Home Grown Facts**

- California produces about two-thirds of the nation's leafy green vegetables.
- California leads the nation in production of mustard greens and ranks second for collard greens.
- California's production of mustard greens is about three times greater than collard greens. Kale production approximately doubles collard production.
- Monterey County is California's leading grower of most leafy green varieties.

#### Activity:

- Select one leafy green vegetable.
- In which counties or regions of California is it grown?
- Why are these regions optimal for growing the variety?
- On average, about how much (acreage and tons) is grown annually?
- Does the variety rank among California's top thirty agricultural commodities?

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

# A Leaf of Cooking Greens History

- Collards were grown by the ancient Greeks and Romans. They are the oldest leafy green within the cabbage family.
- Like collards, kale descended from wild cabbage in eastern Europe and parts of Asia.
- Bok choy is a descendant of Chinese cabbage that originated in China about 6,000 years ago.
- Swiss chard was first grown in Sicily (Italy), but a Swiss scientist was the first to name it.

### Activity:

 Select one cooking green that is grown in California. Research when and how the variety came to be grown in California.

#### For more information, visit:

www.fruitsandveggiesmatter.gov/month/greens.html http://plantanswers.tamu.edu/publications/vegetabletravelers

# Student Sleuths

- 1 Examine the four Nutrition Facts labels for bok choy, collard greens, kale, and Swiss chard. Make a list for each variety of the excellent and good nutrient sources. Which varieties have similar excellent sources? Which have similar good sources? Which have different good or excellent sources? Describe each nutrient's function in the body and how it connects to health.
- 2 Select one leafy green variety. Find the nutrition information for raw and cooked. (Hint: use similar measurements.) Make a chart comparing nutrient values for both forms. What happens to the nutrients when cooked? Make a hypothesis why there are differences between the raw and cooked forms. Why do leafy greens shrink when cooked? On average, by how much do leafy greens shrink (use percentages or ratios)?
- **3** Research several cultures and describe how "greens" have played a role in traditional recipes. Where in the United States are cooked greens most commonly eaten? Interview family members or neighbors to find out which cooked greens they eat. Bring a recipe to share with class featuring your favorite cooked greens and key nutrient facts.

#### For information, visit:

www.fruitsandveggiesmatter.gov/month/greens.html www.ars.usda.gov

# Student Champions

How walkable is your school's community? All neighborhoods have the right to clean, safe physical activity areas – including walking routes. Encourage students and parents to get involved with International Walk to School Month (October) and in assessing your community's needs for improved walking routes.



- Visit www.cachampionsforchange.net. Go to the Our Community – How to Make Healthy Changes page.
- Download the Walkability Assessment and complete as a class.
- Submit results to the school principal, faculty, and PTA.
- Develop a plan to make improvements, if needed.
- Identify and map safe walking routes to and from school.
  Work within a two-mile radius of school.
- Map out safe walking routes to other community areas parks, farmers' markets, and shopping centers.
- Share maps with parents, school leaders, and neighbors.

#### Follow-up Activity:

Complete the Physical Activity Corner exercise on page 4.

For more information, visit: www.saferoutesinfo.org

# **Adventurous Activities**

#### **Science Investigation**

#### What You Will Need (per student):

- Printed copy of leafy green botanical image\*
- Paper and colored pencils

#### Activity:

- Define each of the labeled plant parts in the botanical image.
- Describe *photosynthesis* and its role in plant growth.
- Select one leafy green variety. Research how it grows from root cells to maturity. Make a sketch at each stage of development.
- Complete School Garden activity on page 3.
  \*Download from www.harvestofthemonth.com.

# **Cafeteria Connections**

- Share results from *Taste Testing* activity (page 1) of students' favorite cooked greens variety.
- Encourage school nutrition staff to do weekly taste tests of different cooked greens. Offer to help prepare and serve taste tests.
- Organize a school-wide contest for students to vote for their favorite cooked greens variety.
- Suggest using local growers to supply greens for the salad bar – spinach, romaine lettuce, and cabbage.

# **Just the Facts**

- Collard, mustard, and turnip greens are commonly known as "Southern greens."
- In Chinese, bok choy means "white vegetable."
- Although it looks like romaine lettuce or celery stalks, bok choy is actually a type of cabbage.
- Swiss chard is a type of beet grown for its edible leaves.
- Some kale varieties are "flowering" and grown for their white, red, pink, purple, and blue ornamental leaves.

#### For more information, visit: www.fruitsandveggiesmorematters.org

# **Activities & Resources Galore**

Visit the Educators' Corner online for more resources:

- Cooking in Class (recipes analyses, cooking tips)
- Reasons to Eat (Nutrition Glossary)
- How Does It Grow (botanical images, growing tips)
- Student Sleuths (Answer Key)
- Adventurous Activities
- Literature Links (book lists)
- Links to California Content Standards (all grades)

#### All available at www.harvestofthemonth.com.

# **Physical Activity Corner**

Walking is one of the best ways to be active every day. Physical activity can improve students' learning. Encourage students to walk more – especially outside of school.

#### **Class Activity:**

 Participate in any school activities celebrating International Walk to School Month in October.



- Have students make a pledge to walk a certain number of steps each day (e.g., 10,000 steps).
- Map out the estimated number of steps to get to common places within the school (e.g., from the classroom to the school yard, cafeteria, front office).
- Make a challenge among students in your classroom to track the number of steps they take each day.
- Track results on a display or poster board in classroom.
- Challenge other classrooms to a similar walking contest.
- Complete Student Advocates activity on page 3.

#### Helpful Hint:

Work with school leaders to start a Kids Walk-to-School Program at your school. For information, visit: www.cdc.gov/nccdphp/dnpa/kidswalk

For information on Walk to School Month, visit: www.walktoschool.org

# **Literature Links**

Plan a visit to the library. Work with librarian to display a variety of books, encyclopedias, and journals on leafy greens and gardening. Feature a collection of ethnic cookbooks. Post students' leafy green drawings and botanical images around the library.

#### Activity:

- Select one leafy green variety.
- Find at least two different sources on your variety (e.g., a book and journal article).
- Write a report describing the plant's history, growing patterns, growing regions, uses, and health benefits.
- Find a recipe that features the leafy green vegetable.
- Present findings to class.

For a list of book ideas, visit: www.harvestofthemonth.com







# Health and Learning Success Go Hand-In-Hand

Your Local School Wellness Policy (LSWP) can help improve the academic success of your students. Studies show a clear link between nutrition, physical fitness, and academic achievement. Strong bodies and strong minds work together to help students succeed – meaning increased concentration, improved mathematics, reading and writing test scores, and less disruptive behavior. Bring your LSWP to life by incorporating *Harvest of the Month* throughout the year.

#### Exploring California Cucumbers: Taste Testing Getting Started:

 Partner with your school nutrition staff, local farmers, or grocery stores. Get produce samples for taste testing.

#### What You Will Need (per group):

- 2 different varieties of raw, whole cucumbers (rinsed)\*
- 1 dill pickle
- Paring knives and cutting boards
- Napkins/paper towels

\*Refer to page 2 for a list of varieties.

#### Activity:

- Have students make three columns and label with each variety of cucumber and dill pickle. Make five rows and label as: look, feel, touch, smell, taste.
- Examine each item using the five senses. Describe findings in the chart. Discuss similarities and differences as a class.
- Make another grid with the same column labels. Label four rows: sweet, salty, sour, bitter.
- Enter presence or absence of each taste bud sensation. Discuss the similarities and differences as a class.

#### For more ideas, reference:

Kids Cook Farm-Fresh Food, CDE, 2002.

#### Cooking in Class: Chili Cucumbers Ingredients:

#### Makes 20 tastes

- 40 whole wheat crackers
- 3 large cucumbers (40 slices)
- Chili powder
- Serving tray and napkins

1. Place one cucumber slice on top of a cracker.

2. Sprinkle with chili powder. Serve two crackers with napkin to each student.

Source: Monrovia Unified School District

For nutrition information, visit: www.harvestofthemonth.com



# **Reasons to Eat Cucumbers**

A  $\frac{1}{2}$  cup of sliced cucumbers provides:

- A good source of vitamin K.
- A source of water, a vital nutrient for the body.\*

\*Learn about water on page 2.

For information, visit: www.nal.usda.gov/fnic/foodcomp/search

#### Champion Sources of Water:\*

(Percent Water by Weight)

- Cabbage (92%)
- Cantaloupe (90%)
- Celery (95%)
- Cucumbers (96%)
- Grapefruit (90%)
- Honeydew melon (90%)
- Spinach (91%)
- Strawberries (91%)
- Tomatoes (95%)
- Watermelon (91%)

\*Champion sources contain at least 90% water.

For information, visit:

www.extension.iastate.edu/nutrition/sport/ fluids.html

Nutrition Facts

Serving Size: 1/2 cup	cucumbers,
sliced (	52g)
Calories 8 C	Calories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 1mg	0%
Total Carbohydrate 2	g 1%
Dietary Fiber 0g	1%
Sugars 1g	
Protein 0g	
Vitamin A 1%	Calcium 1%
Vitamin C 3%	Iron 1%

# CUCUMBERS



### What is Water?

- Water is an essential nutrient for all life forms.
- Approximately 60-65% of the human body is made up of water, or about 11-12 gallons for a 150-pound person.
- Every cell, tissue, and organ and nearly every bodily function needs water to operate.
- Water carries nutrients, helps maintain normal body temperature, lubricates joints, and helps get rid of waste products.
- The recommended daily amount of fluid is 64 ounces (or eight cups).
- Water can come from foods, like fruits and vegetables, as well as plain water and other beverages.

# **How Much Do I Need?**

A ½ cup of sliced cucumbers is about one cupped handful. This is about one medium cucumber. The amount of fruits and vegetables you need depends on your age, gender, and physical activity level. Look at the chart below to find out how much you and your students need.

#### Recommended Daily Amounts of Fruits and Vegetables\*

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	4 <sup>1</sup> / <sub>2</sub> - 6 <sup>1</sup> / <sub>2</sub> 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.

Set an example by incorporating *Harvest of the Month* produce into your meals and snacks. Choose at least one day each month to eat with your students. Remind them that eating a variety of colorful fruits and vegetables will help them reach their total daily needs.

# **How Do Cucumbers Grow?**

The cucumber is a warm weather, tropical plant. Outdoor cucumber plants are *monoecious* (meaning there are both stamens and pistils in separate flowers on the same plant) and produce 10-20 male flowers for every one female flower. When the female flower is pollinated, the cucumbers have seeds. Greenhouse cucumbers are generally *parthenocarpic*. This means the plants only have female flowers (gynoecious), which do not require pollination; therefore, the cucumbers are seedless.

#### For more information, visit:

http://vric.ucdavis.edu/main/veg\_info.htm http://urbanext.illinois.edu/veggies/cucumber1.html

# **Botanical Facts**

Pronunciation: 'kyü-(,)kəm-bər Spanish name: pepino Family: Cucurbitaceae Genus: *Cucumis* Species: *C. sativus* 



Cucumber is an annual plant of the gourd family, Cucurbitaceae.

The cucumber species, *Cucumis sativus*, is divided into two categories: slicing and pickling. Slicing cucumbers are usually served raw in salads, sandwiches, sushi, and various snacks. Varieties include Apple, Lemon, Japanese, Persian, and English. Pickling cucumbers are developed specifically for the pickling process. They are generally smaller than slicing cucumbers with a thick, bumpy skin. Pickling varieties include Heinz, Country Fair, and Miss Pickler. Both categories can be grown outside or in a greenhouse.

#### For more information, visit:

www.cucurbit.org/family.html www.lpl.arizona.edu/~bcohen/cucumbers/basics.html www.botgard.ucla.edu/html/botanytextbooks/economicbotany/ Cucurbita/index.html



Source: *Cool as a Cucumber, Hot as a Pepper,* Meredith Sayles Hughes, Lerner Books, 1999.

# **School Garden: Seasonal Transitions**

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.

Spring is prime planting time. Pull up your sleeves, get in the garden, and GROW!

 April is the time to prepare your ground and raised beds for direct seeding and transplanting.



cucumbers, melons, pumpkins, squashes, and gourds.

 Create a garden outside your classroom. There are a number of dwarf varieties in the Cucurbit family that are well-suited to containers. Visit your local nursery and check them out.

#### For more ideas, visit:

http://celosangeles.ucdavis.edu/Garden\_Tips\_for\_Los\_Angeles\_ County/April.htm

## **A Slice of Cucumber History**

- Cucumbers were first cultivated in India about 3,000 years ago.
- The cucumber arrived in Europe in the Middle Ages. By the 14th century, cucumbers had migrated to England.
- Columbus transported cucumbers to North America from Spain in the early 16th century.
- European trappers, hunters, and explorers traded cucumbers for squash, pumpkins, and gourds with native tribes of the Great Plains and Rocky Mountains.
- These tribes traded with California Native Americans who used the seeds for planting and roasting.

#### For more information, visit:

www.botgard.ucla.edu/html/botanytextbooks/economicbotany/ Cucurbita/index.html

www.lpl.arizona.edu/~bcohen/cucumbers/history.html

# Student Champions

- Water is a vital nutrient for the body. Check the drinking fountains in your school. Do they work? Are they clean? Report findings to site administrators along with a recommended course of action, if needed.
- Conduct a blind taste test using water from tap and bottled water. Be sure both are the same temperature. Which one do students like best? Is there a major difference in taste? What advantages does tap water offer that bottled water does not (minerals, vitamins, convenience, price, etc.)? Have students report findings to school administrators.

Source: Hawthorne School District

For more ideas, visit: www.epa.gov/earthday



# **Student Sleuths**

- 1 Is a cucumber a fruit or vegetable? Make a list of produce items that are considered vegetables but are really fruits, and explain the difference.
- 2 Research the importance of water to health. Why does the body need water?
- 3 How much water does the body need daily? How do you calculate that amount? What is your plan for getting enough water each day?
- 4 What are the "compartments" that hold water in our bodies?
- 5 What does parthenocarpy mean?

#### For information, visit:

www.cdfa.ca.gov www.lpl.arizona.edu/~bcohen/cucumbers/info.html www.anrcatalog.ucdavis.edu

# **Home Grown Facts**

- California ranks second in fresh cucumber production nationwide behind Florida.
- California is fifth in the nation in pickling cucumber production.
- Key production counties for fresh market and pickling cucumbers are San Joaquin, San Diego, Ventura, San Benito, and Riverside.\*

\*2007 Data

#### **Student Activity:**

Despite our proximity to such agricultural abundance, we still import many foods from other countries and states. Is shipping food long distances necessary?

- Find out where your food comes from by visiting the produce section of your local store.
- Prepare a proposal for the produce or store manager to include local farmers' produce. Include list of benefits for the store, shoppers, and farmers.
- Compare prices of produce from the grocery store and the local farmers' market. Is there a difference? If so, why do you think this difference exists?

#### Sources:

http://edis.ifas.ufl.edu/PI041 www.cdfa.ca.gov/statistics/files/CDFA\_Sec9.pdf

#### For more information, visit: www.epa.gov/students



# **Adventurous Activities**

### **Science Investigations**

- Cucumbers grow best in temperatures from 65-75 degrees Fahrenheit. Convert this to degrees Celsius.
- Place one half of a sliced cucumber in salted water and the other half in plain water. Predict which half will gain or lose weight and how much. Describe what osmosis is and how it works in the body.

#### For more ideas, visit: www.harvestofthemonth.com

# **Physical Activity Corner**

Stretching prepares the body for exercise by increasing the flow of blood to the muscles. It also helps prevent injuries. Have students stand and do these exercises. Be sure to switch sides and reverse directions.

- Neck stretch: Slowly and gently move your head clockwise.
- Hamstring stretch: Slowly bend over and reach for your toes. Hold for 15-30 seconds. Keep knees slightly bent.
- Quadriceps stretch: Gently bend your right knee behind you, reach back and grab your ankle with your right hand. Bring your heel as close as you can to the back of your thigh or buttocks. Hold for 15-30 seconds. If needed, hold a chair or desk for balance.
- **Triceps stretch:** Extend arms vertically up over your head, slide one hand down the middle of your back and with the other hand grab your elbow and pull it towards the middle of your back. Hold for 15-30 seconds.
- Extended arm circles: Extend arms horizontally. Make small circles first, then bigger, then back to small circles.

Adapted from: Tools for Learning, Fuel for Moving: Performance-Related Nutrition Instructional Materials for Physical Education and Physical Activity Programs, Network for a Healthy California, 2009.

#### For more ideas, visit:

www.cdph.ca.gov/programs/cpns/Documents/ Network-ShapeofYoga.pdf



# **Just the Facts**

- There are over 800 species in the Cucurbitaceae family and they include cucumbers, gourds, melons, pumpkins, and squashes.
- The inside of a cucumber can be up to 20 degrees cooler than the exterior.
- Per capita, Americans eat about eight pounds of pickles per year.

#### For more information, visit:

www.lpl.arizona.edu/~bcohen/cucumbers/history.html

# **Cafeteria Connections**

- Coordinate with school nutrition staff and ask them to provide different varieties of cucumbers\* and pickles.
- Contact your local farmers' market to determine which produce is at its peak and work with a farmer to provide different fruits and vegetables for the tasting event.
- Design small information cards for each featured produce item and include: name, where it is grown, how to eat it, what key nutrients it provides, how to store it, where to buy it, and how much it costs.
- Invite parents to participate and offer suggestions for using the cards at home.

\*Refer to Botanical Facts (page 2) for varieties.

Adapted from: *Popular Team Nutrition Events: An Idea Book,* USDA, 2005. www.fns.usda.gov/tn/Resources/popularevents.pdf

# Literature Links

- Enlist your school librarian or local dietitian to help you find resources on nutrition and plan activities listed in this newsletter.
- Make the recipe from the *Cooking in Class* activity (page 1) and invite your librarian to read a book to your class and lead the activity.

For a list of book ideas, visit: www.harvestofthemonth.com









# **Nutrition Facts**

Serving Size: 1/2 cup s	strawberries,
sliced (	83g)
Calories 27 Ca	alories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 1mg	0%
Total Carbohydrate 6g	2%
Dietary Fiber 2g	7%
Sugars 4g	
Protein 1g	
Vitamin A 0%	Calcium 1%
Vitamin C 81% Iron 2	

# **STRAWBERRIES**

# **Health and Learning Success Go Hand-In-Hand**

With Standardized Testing and Reporting (STAR) taking place in the spring, it is important for students to eat nutritious meals and snacks and get at least 60 minutes of physical activity every day. Studies show that students who eat less fruits and vegetables show decreased performance in the classroom. Studies also show that physical activity is correlated with improved academic performance. *Harvest of the Month* connects with academic standards to help students learn about the importance of eating fruits and vegetables and being active every day.

## Exploring California Strawberries: Taste Testing What You Will Need (per group of 6 students):

- 6 small strawberries and 6 large strawberries
- Printed Nutrition Facts label for strawberries\*
- Paper and colored pencils

\*Download label from www.harvestofthemonth.com.

#### Activity:

- Make two columns on a sheet of paper.
- Explore and taste the large strawberries; note in the first column the color, texture, smell, and flavor.
- Repeat with the small berries, noting characteristics in the second column.
- Compare and contrast the large and small strawberries; which size was sweeter?
- Discuss what may affect the taste and size (variety, sun, water, etc.).
- Review Nutrition Facts label and talk about the health benefits of eating strawberries (refer to *Reasons to Eat* below). Have students write down what they like est about strawberries and their favorite ways to eat them.

#### For more ideas, reference:

School Foodservice Guide – Successful Implementation Models for Increased Fruit and Vegetable Consumption, Produce for Better Health Foundation, 2005, pp. 39-42.

# Cooking in Class: Strawberry Smoothie

Makes 24 tastes at <sup>1</sup>/<sub>4</sub> cup each Ingredients:

- 1 cup 100% orange juice
- 2 large bananas, peeled and sliced
- 2 cups fresh or frozen strawberries, thawed
- 2 cups lowfat vanilla yogurt
- 10 ice cubes
- Blender
- Paper cups
- 1. Combine orange juice, banana, and half the strawberries into a blender container. Blend until smooth.
- 2. Add yogurt, remaining strawberries, and ice cubes. Blend until smooth.
- 3. Serve immediately in cups.

Hint: You may need to prepare in two batches.

Nutrition information per serving: Calories 38, Carbohydrate 8 g, Dietary Fiber 1 g, Protein 1 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 1 mg, Sodium 19 mg

Adapted from: Soulful Recipes: Building Healthy Traditions, Network for a Healthy California, 2008.

### Reasons to Eat Strawberries

A ½ cup of sliced strawberries (about 4 large strawberries) provides:

- An excellent source of vitamin C\* more than 80% of the recommended Daily Value.
- A source of fiber and folate.

\*Learn about vitamin C on page 2.

#### Champion Sources of Vitamin C\*:

- Bell peppers
- Broccoli
- Citrus fruit
- Cantaloupe
- Cauliflower
- Kiwifruit
- Leafy greens
- Strawberries

\*Champion sources provide an excellent source of vitamin C (at least 20% Daily Value).

#### For more information, visit:

www.nal.usda.gov/fnic/foodcomp/search/ (NDB No.: 09316)

# What is Vitamin C?

- Vitamin C acts as an antioxidant, meaning it helps reduce damage to cells caused by oxidation. Cellular damage can lead to certain diseases.
- The role of vitamin C (ascorbic acid) may be linked to its prevention of degenerative diseases, certain cancers, and cardiovascular diseases.
- Humans do not have the ability to produce vitamin C.
  We must obtain it through the foods we eat in our diet.
- Vitamin C is sensitive to air, heat, and water and can be lost when exposed in excess. To prevent loss of vitamin C in fresh fruits and vegetables, avoid prolonged storage, over-cooking, and processing.

Sources: http://jn.nutrition.org http://lpi.oregonstate.edu

# **How Do Strawberries Grow?**

Strawberries grow on small, low growing perennials that prefer well-drained, sandy soil. The plants need plenty of water, warm days, and cool nights.

Many strawberry plant varieties produce stolons that spread out from the base and take root to form new plants. The plants produce white or pink flowers. After flowering, strawberry plants require pollination by bees or other insects. Factors such as cool or wet weather, which discourages bee activity, can have a damaging affect on fruit production. Growing conditions also affect the time required to produce fruit. On average it takes about 30 days for flowers to develop into fruit. The first crop can be harvested the year following planting.

There are three basic types of strawberry plants:

- June-bearing plants produce a single crop each year, usually lasting three to five weeks in late spring.
- Day-neutral plants produce fruit the same year in which they are planted and can produce berries throughout their year-long growing season since they are not dependent on day length to produce flower buds.
- Ever-bearing plants produce fruit twice per year, usually in late June to early July and again in late August. Because they produce few berries, they are rarely used for commercial production.

While strawberry plants can survive and produce fruit for many years, commercial strawberry plants are replaced every two to four years.

Strawberries are delicate and must be picked by hand when ripe. They are then taken to cooling facilities to help them last longer.

See the *School Garden* activity (page 3) to grow your own strawberry patch.

For more information, visit: www.calstrawberry.com

# **Botanical Facts**

Pronunciation: strô'bĕrē Spanish name: fresa Family: Rosaceae Genus: *Fragaria* Species: *Fragaria virginiana* 



Strawberries belong to the genus *Fragaria* in the rose family. They are low, herbaceous, perennial plants with

edible fruits that are called an "accessory fruit." This means the fleshy part is not derived from the plant ovaries, but from the peg of the hypanthium that holds the ovaries.

There are about 12 species of strawberry plants. The common wild strawberry, *Fragaria vesca*, is believed to have been the first species cultivated in the early 17<sup>th</sup> century. Botanists then found other garden varieties: *Fragaria elatior*, a European species and the parent of *Fragaria virginiana* from the United States. About this time, *Fragaria chiloensis* was discovered on an island off the coast of Chile. Today, nearly all varieties can be linked to these four species.

California has several strawberry varieties in commercial production, each with its own characteristics, advantages, and harvest time. Some varieties include Aromas, Camarosa, Camino Real, Diamante, and Ventana.

For more information, visit: www.urbanext.uiuc.edu/strawberries/

# How Much Do I Need?

A ½ cup of sliced strawberries is about four large strawberries or one cupped handful. The amount of fruits and vegetables each person needs depends on age, gender, and physical activity level. Have students visit **www.mypyramid.gov/kids** to find out how much they need to eat. Encourage them to eat a variety of colorful fruits and vegetables – fresh, frozen, canned, and dried – in meals and snacks to help them reach their goals.

#### **Recommended Daily Amount of Fruits and Vegetables\***

		v
	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	41/2 - 61/2 cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	3 <sup>1</sup> / <sub>2</sub> - 5 cups per day

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



# School Garden: Plant a Strawberry Patch

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.

Growing strawberries in a school environment is easy and an enjoyable learning experience for students. To get started, all you need are strawberry plants and a growing area that gets at least six hours of sunlight every day<sup>\*</sup>.

#### **Growing Tips:**

- Plant strawberries on a cloudy day or in the late afternoon.
- Strawberries prefer a well-drained soil, rich in organic matter.
- Set the strawberry plant in the soil so that the soil is just covering the tops of the roots. Do not cover the crown.
- Plants should be set 18 to 30 inches apart in rows of three to four feet apart. This will allow daughter plants to root freely and to become a matted row.
- Do not plant strawberries where peppers, tomatoes, eggplant, and potatoes have been grown. These plants could harbor verticillium wilt, a major strawberry disease.
- Strawberry plants need about one inch of water per week.
- After four or five weeks, plants will produce runners and new daughter plants.

\*Refer to How Do Strawberries Grow? on page 2 for plant varieties.

#### Adapted from: www.urbanext.uiuc.edu/strawberries/growing.html

For more ideas, visit: www.kidsgardening.com/teachers.asp

# Student Sleuths

- 1 What is the recommended daily amount for vitamin C, folate, and fiber? For each of these three nutrients, how much (in % Daily Value) does a ½ cup of strawberries provide?
- 2 How does vitamin C work as an antioxidant? What are the best food sources of vitamin C?
- **3** Describe the role vitamin C plays in the human immune system.
- **4** Research the different theories on the origins of how the strawberry got its name. Which theory do you think is most plausible?
- 5 What does the red color of strawberry flesh tell you?
- **6** Identify four factors that can influence the flavor of a strawberry.
- 7 Map the various regions in California where strawberries are grown. Identify their growing season and main varieties produced. Compare the regions — why does each region grow a different variety? What factors affect when and what variety of strawberries are grown? Hypothesize why California is the nation's leading strawberry producer.

#### For information, visit:

www.calstrawberry.com www.cfaitc.org/factsheets/pdf/Strawberries.pdf

# A Slice of Strawberry History

Strawberries have a history that goes back more than 2,000 years. They are indigenous to both the northern and southern hemispheres. Strawberries grew wild in Italy where the first mention of strawberries occurred in the writings of Cato, a Roman Senator.

European explorers discovered strawberries in North America in 1588 when they landed on the shores of the state of Virginia. The explorers found tiny, sweet, deep red, wild strawberries. Early settlers in Massachusetts enjoyed eating strawberries grown by local American Indians who cultivated them as early as 1643.

The first "refrigerated" shipping across the United States occurred in 1843 when innovative growers in Cincinnati, Ohio spread ice on top of the strawberry boxes and sent them by train. By the middle of the 1800s many regions were cultivating strawberries. Strawberries have been grown in California since the early 1900s.

#### For more information, visit:

www.ba.ars.usda.gov/fruit/services/strawhist.html

# **Home Grown Facts**

- California is the largest producer of domestically grown strawberries, supplying almost 90% of the strawberries grown in the United States\*.
- On average, more than 30,000 acres produce over one billion pounds of fresh and frozen strawberries.
- If all the strawberries produced in California this year were laid berry to berry, they would wrap around the world 15 times – enough to provide every household in the United States with 12 one-pint baskets.
- There are four main growing regions for strawberries in California (see map), each with different growing periods.

\*2008 Data

#### For more information, visit: www.cdfa.ca.gov



# **Adventurous Activities**

#### **Creative Writing:**

 Discuss the advantages and disadvantages of hand and machine harvesting fruits and vegetables.

#### **History Exploration:**

- Trace the history of the cross-pollination of the Virginia and Chilean berries.
- Research some medicinal uses of strawberries.

#### **Science Investigation:**

 Without cross-pollination, we would not have the strawberry genotypes available today. Explain what a genotype is. Explain the cross-pollination process versus self-pollination.

#### For more ideas, visit: www.cafarmtoschool.org

www.nal.usda.gov/kids

# **Just the Facts**

- Strawberries are usually the first fruit to ripen in the spring.
- The seeds of the strawberry are really the fruit while the red fleshy part is the receptacle that holds the parts of the flower together.
- On average, there are 200 tiny seeds on every strawberry.
- Strawberries are the most popular berry in the United States.
- Ninety-four percent of American households consume strawberries.
- On average, Americans eat more than three pounds of fresh strawberries each year plus another almost two pounds of frozen strawberries.

# **Cafeteria Connections**

Partner with school nutrition staff to conduct a contest over several days in the cafeteria. Use questions based on information contained in this newsletter. For example:

- Why is it important to eat foods containing vitamin C?
- What is the average number of seeds on a strawberry?
- What is the Spanish word for strawberry?
- What is the botanical name for strawberry?

You can also create your own questions or have older students develop questions and then find the answers. Post questions on the cafeteria bulletin board at the beginning of the week. Then post the answers on Friday. Draw names of the "winners" and have a Strawberry Smoothie\* Party.

\*Refer to recipe on page 1.

#### For more ideas, reference: Fruits and Vegetables Galore, USDA, 2004.

# **Physical Activity Corner**

Students who get regular physical activity have demonstrated better performance on academic tests. During spring testing, help your students get at least 60 minutes of physical activity every day, in addition to encouraging them to make healthy eating choices. Complete the following activity in conjunction with the *What's on a Label?* activity\*.

#### What You Will Need:

 4 cones or 2 long pieces of yarn/rope to make a "start" and "finish" line about 20 paces apart

#### Activity:

- Students line up along start line.
- Read off the name of a food, nutrient, or activity.
- Students decide if they should eat more or less of the food or nutrient, or do more or less of the activity.
- If decide to get more, take two jumps forward. If decide to get less, take one jump backward.
- As game progresses, switch the locomotor skill to move forward/backward (running, hopping, skipping, crawling).

\*This activity can be found in the *School Idea & Resource Kits* (Activity 8, 4<sup>th</sup> Grade and Activity 9, 5<sup>th</sup> Grade). Download kits from http://www.cdph. ca.gov/programs/cpns/Pages/PowerPlayResources.aspx.

Adapted from: Power Up for Learning, Network for a Healthy California— Children's Power Play! Campaign, 2009.

# Student Champions

Since strawberries are easy to grow, have students design "Strawberry Instructions" packs that include strawberry seeds, nutrition facts, history, and fun illustrations. Send to local elder care centers, after-school programs, or youth activity centers, and offer to help plant the seeds. Or, have students distribute to families at your school's Open House.

# **Literature Links**

- Primary: From Seed to Plant by Gail Gibbons, Berries, Nuts and Seeds by Diane Burns, Gabe's Grocery List by Heidi Shelton Jenck, and Farmer's Market Rounding by Julie Dalton.
- Secondary: The Reason for a Flower by Ruth Heller, Strawberry Girl by Lois Lenski, and Sell What You Sow by Eric Gibson.

For more ideas, visit: www.cfaitc.org/books









### **Health and Learning Success Go Hand-In-Hand**

California's geography offers a bounty of fresh produce and recreational areas. From stone fruits and salad greens to state and local parks, there is no shortage of healthy foods to eat and outdoor activities to do in California. Studies show that healthy eating and physical activity are correlated with improved academic achievement. Use *Harvest of the Month* to allow students to experience California-grown fruit and vegetables with their senses. Teach students to live a healthy, active lifestyle and support academic content standards to link the classroom, cafeteria, home, and community.

## Exploring California Peaches: Taste Testing

#### What You Will Need (per group of 8 students):

- Four ripe peaches and four ripe nectarines
  - (two each of yellow and white varieties)\*
- Paring knife and cutting board
- Paper towels

\*Choose peaches and nectarines that are fragrant and firm to slightly soft when pressed. *Optional: Sample other stone fruits (cherries, plums, apricots, etc.) with peaches.* 

#### **Activity:**

- Distribute yellow peaches and nectarines to each student group.
- Observe the look, feel, and smell of each; record observations.
- Cut open the second yellow fruit; observe the taste and sound and record observations.
- Repeat with white peaches and nectarines.
- Discuss similarities and differences among the four varieties.
- Record students' favorite variety; share results with school nutrition staff.

#### For more ideas, reference:

Nutrition to Grow On, CDE, 2001.

# Cooking in Class: Peach Smoothies

Makes 35 tastes at <sup>1</sup>/<sub>4</sub> cup each Ingredients:

- 6 fresh peaches, pitted and sliced
- 6 fresh nectarines, pitted and sliced
- $4\frac{1}{2}$  cups plain nonfat yogurt (or milk)
- 4½ cups 100% orange juice
- 3 tablespoons honey
- Blender container
- Small paper cups
- 1. Blend all ingredients together with ice. (May need to do in 2 to 3 batches.)
- 2. Serve cold in cups.

Nutrition information per serving: Calories 62, Carbohydrate 13 g, Dietary Fiber 1 g, Protein 3 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 1 mg, Sodium 26 mg

Adapted from: *Kids Cook Farm-Fresh Food*, CDE, 2002.



## **Reasons to Eat Peaches**

A <sup>1</sup>/<sub>2</sub> cup of sliced peaches (about half of a medium peach) provides:

- A source of vitamin A and vitamin C.
- A source of fiber\*.

\*Learn about fiber on page 2.

#### **Champion Sources of Fiber\*:**

- Avocados
- Beans
- Blackberries
- Broccoli
- Papayas
- Raspberries
- Sweet potatoes
- Whole wheat cereals and breads
- Winter squash

\*Champion sources provide a good or excellent source of fiber (at least 10% Daily Value).

#### For more information, visit:

www.nal.usda.gov/fnic/foodcomp/search/ (NDB No.: 09236)



Vitamin A 5%Calcium 1%Vitamin C 9%Iron 1%

PEACHES

## What is Fiber?

- Fiber is a complex carbohydrate found only in plant foods like fruits, vegetables, grains, nuts, and seeds.
- Dietary fiber is important for lasting health benefits. It helps you feel full, helps keep your blood sugar level normal, helps to avoid constipation, and can help individuals maintain a healthy weight.
- Currently Americans consume only about half the amount of recommended fiber daily.
- Eating foods that are rich in fiber like fruits, vegetables, dry beans, and whole grains – will help you meet your daily needs for fiber.
- The 2010 Dietary Guidelines for Americans recommend 14 to 31 grams of fiber per 1,000 calories each day, depending on age and gender. To find out how much you need, visit www.mypyramid.gov.

For more information, visit: www.teamnutrition.usda.gov www.eatright.org/Public/content.aspx?id=6796&terms=fiber

# **How Much Do I Need?**

A  $\frac{1}{2}$  cup of sliced peaches is about one cupped handful. This is about the size of half of a medium peach. The amount of fruits and vegetables you need depends on your age, gender, and how active you are every day. Look at the chart below to find out how many cups of fruits and vegetables you and your students need. All forms count toward the daily amount – fresh, frozen, canned, dried, and 100% juice. Have students make a list of their favorite fruits and vegetables and how they like to eat them. Encourage students to share their lists with their families.

#### **Recommended Daily Amount of Fruits and Vegetables\***

	Kids, Ages 5-12	Teens and Adults, Ages 13 and up
Males	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	41/2 - 61/2 cups per day
Females	2 <sup>1</sup> / <sub>2</sub> - 5 cups per day	3½ - 5 cups per day

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



Adapted from: *Tall and Tasty Fruit Trees,* Meredith Sayles Hughes, 2000. Download botanical image from www.harvestofthemonth.com.

# **Botanical Facts**

Pronunciation: pēch Spanish name: durazno Family: Rosaceae Genus: Prunus Species: P. persica



The peach comes from a deciduous fruit-bearing tree of the rose family and is native to China. Its botanical name, *Prunus persica*, resulted from the original belief that peaches were native to Persia (Iran)\*. Commercially, peaches and nectarines are treated as different fruits but

they belong to the same species. The nectarine is a type of peach with a smooth, fuzzless skin.

Peaches are classified as a stone fruit, meaning that they possess a single large seed or stone surrounded by juicy flesh. Other common stone fruits include cherries, plums, and apricots. There are two major peach cultivars — clingstone and freestone — based on how the flesh sticks to the stone (or pit). Commercially, nearly all clingstone varieties are processed (pit removed), then canned, preserved, juiced, or used in other food products (e.g., baby food). Freestone peaches are primarily sold as fresh. \*Refer to *A Slice of Peach History* (page 3) for more information.

#### For more information, visit:

www.agmrc.org/commodities\_products/fruits/peach\_profile.cfm

# **How Do Peaches Grow?**

Peach trees are warm-weather deciduous trees that grow 15 to 25 feet high. Susceptible to drought and frost, peach trees grow best inland and in warmer, tropical to subtropical climates. Most commercial trees are grafted cultivars, bearing fruit after about three to five years. Healthy trees reach peak production when about 10 years old and can live up to 20 years.

Unlike most fruit trees, the flowers of peach trees are produced in early spring before the leaves. Pruning is necessary during the spring to ensure quality fruit production. This technique of thinning increases the size and improves the taste of the fruit. Commercial growers use a machine to brush the peach skin after harvesting to remove most of the natural fuzz.

Soil	Deep, well-drained, sandy loam
Exposure	Full sun
Irrigation	Constant water supply, increased slightly before harvest
Planting	Bareroot trees planted in winter; pruning in spring
Harvest Season	June through September; peaks in July and August
Harvesting	Hand-picked when fruit is mature and firm; three to four times in three-day intervals
Storage	Refrigerated immediately to 35 F (slows ripening); then processed (clingstone) or shipped to market (freestone)

Adapted from: Tall and Tasty Fruit Trees, Meredith Sayles Hughes, 2000.

# **Home Grown Facts**

- The United States is the world's leading grower of peaches. California also leads the country in peach and nectarine production – growing more than 84% of the nation's peaches and 95% of the nation's nectarines\*.
- California is the nation's sole producer of clingstone peaches\*.
- Peaches and nectarines rank in California's top 20 commodity exports (#17)\*.
- Fresno County is the leading producer of the State's peach and nectarine crops.
- Other top peach-producing counties include Tulare, Stanislaus, Sutter, and Yuba. Tulare, Kings, and Kern counties are also leading growers of nectarines.

\*2008 Data

#### For more information, visit: http://usda.mannlib.cornell.edu/

# **School Garden: Garden Sweep**

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.

Gardens often contain many insects and can sometimes be damaged or destroyed by hungry pests. There are also helpful insects, though, that will eat the harmful kind. Do a sweep of your school garden and see what types of insects are helping or harming it.



#### What You Will Need:

- Quart-size (or larger) resealable plastic bags (one bag per team)
- Sweep nets (one or two per team)
- Cotton gloves
- Magnifying glasses
- Insect identification chart or field guide

#### Activity:

- Divide students into teams of five.
- Assign each team with a large area to sweep.
- Spend 15 to 30 minutes capturing insects using nets and transferring to the resealable bag\*.
- Examine insects using the magnifying glasses.
- Use the chart or field guide to identify insects.
- Discuss student findings and observations as a class. Sample discussion topics include:
  - Insects that inhibit or damage the garden
  - Insects that help the garden
  - Seasonal insects

 $^{\ast}$  Only students wearing gloves should transfer insects to bags to prevent insect bites or stings.

#### Adapted from: www.kidsgardening.com

For more ideas, reference: A Child's Garden of Standards, CDE, 2002. www.lifelab.org

# A Slice of Peach History

- The peach tree originated in western China about 4,000 years ago.
- Alexander the Great introduced the peach to Greek and Roman society.
- From the Mediterranean and North Africa, the peach traveled north during the Middle Ages with the Moors to the Iberian Peninsula.
- Spanish and Portuguese explorers brought peaches to the Americas in the 1500s.
- Spanish missionaries in California planted the first peach trees in the mid-18<sup>th</sup> century.
- Russian immigrants brought peach seeds to San Francisco in the early 1800s and planted them near Fort Ross.
- Gold miners began California's commercial peach production in 1849 after demand for peaches could not be fulfilled by eastern supply.

#### For more information, reference:

Tall and Tasty: Fruit Trees, Meredith Sayles Hughes, 2000.

# **S**tudent Sleuths

- 1 Name the two different forms of fiber. Describe the different ways in which each form acts in the digestive system. List food sources of each.
- 2 The store sells the following peach items: fresh peaches, frozen peach slices, dried peaches, canned peaches, peach fruit leather, and peach-flavored iced tea. You want to buy a peach item that will provide you with the most nutrients to help you reach your fruit and vegetable goals. Complete the following steps to determine which peach item will provide you with the most nutrients.
  - a Make a chart showing each of the peach items, nutrient values, and the approximate cost per serving.
  - b Which peach serving provides the most nutrients? The least?
  - Which peach item will provide you with the most nutrients for the least cost?
- 3 Using a California map, identify the top 10 counties where clingstone peaches are grown. What geographic characteristics do these counties have in common? Hypothesize why these characteristics are ideal for clingstone peach production. Repeat for freestone peaches. Compare the lists. What are some geographical and climate differences between these areas? What determines if a county's geography is better for growing clingstone peaches versus freestones?

#### For information, visit:

www.cfaitc.org/factsheets/pdf/ClingPeaches.pdf www.cdfa.ca.gov



# **Just the Facts**

- Genetically, nectarines differ from peaches by a single recessive gene — the one that makes peaches fuzzy.
- Members of the rose family, peaches are related to the almond.
- Peaches rank among the top 10 most commonly eaten fruits and vegetables by California children.
- The peach is the state flower of Delaware and state fruit of South Carolina. Georgia is nicknamed *The Peach State*.
- In World War I, peach pits were used as filters in gas masks.

#### For more information, visit:

www.cfaitc.org/factsheets/pdf/ClingPeaches.pdf

# **Cafeteria Connections**

School meals can be a source of many fiber-rich foods\*. Invite school nutrition staff to your classroom to help students identify fiber-rich foods on the menus (lunch, breakfast, snacks). The school nutrition staff can also talk about the health benefits of fiber. Students can develop a list of their favorite fiber-rich foods they would like to see on the school menus. Encourage students to share lists with school nutrition staff and to create posters promoting fiber-rich foods for display in the cafeteria.

#### **Helpful Hint:**

Schools can order a variety of fiber-rich foods through USDA commodity food programs. Visit **www.fns.usda.gov/** fdd/foods/foods available.htm to learn more.

# \*For these purposes, "fiber-rich foods" includes foods that provide at least 5% Daily Value.

# **Physical Activity Corner**

- Divide class into two groups and mark a boundary between groups with rope or chalk.
- Use cones to make a circle (6 paces across) near the outside edge of each territory; this is the "peach."
- Inside each circle place a "stone" (use a peach pit that has been washed or a beanbag).
- On a signal by teacher, any or all of each group may leave their territory and try to capture the other group's stone and bring it back to their territory without being tagged. If student is tagged, he/she freezes and waits for a teammate to high-five to unfreeze.
- Students should only enter the "peach" if trying to capture the stone.

#### **Helpful Hint:**

For safety, avoid fast running.

**Source:** Physical Activity Specialist, Northcoast Region, *Network for a Healthy California*, 2011.

#### For more ideas, visit: www.pecentral.org

# **Adventurous Activities**

#### **History Exploration:**

The peach has a rich history in ancient China and Japan, as well as Roman and Greek mythology. Research the peach's role in Asian folklore and cultural traditions. What does the peach symbolize and what is its significance? Write a short paper describing the peach's significance in Asian culture and compare it to its significance in Roman and Greek mythology.

For more ideas, visit: www.harvestofthemonth.com

# Student Champions

Local parks often need the support of community members to provide a safe and clean environment for recreation. Clean up litter, plant trees, or volunteer at a local park to instill pride and community ownership. Encourage students to get involved — it may help them become more active, both physically and as leaders in their community.



#### **Getting Started:**

- Choose a local neighborhood park. Contact the local city or county parks department.
- Work with department officials to make a list of improvement projects to enhance the park.
- Prioritize the list and select a project.
- Organize and promote a neighborhood event to complete the project.
- Talk to neighbors about ways to keep the park safe and clean. Or, make a flyer with tips and distribute to community members.
- Write and submit an article to a local paper about the activities.

#### For more information, visit: www.parks.ca.gov

### **Literature Links**

- Elementary: Growing Seasons by Elsie Splear, James and the Giant Peach by Roald Dahl, and Peach Boy: A Japanese Legend by Gail Sakurai.
- Secondary: Epitaph for a Peach by David Masumoto, Family Trees: The Peach Culture of the Piedmont by Mike Corbin and Tall and Tasty: Fruit Trees by Meredith Sayles Hughes.

For more ideas, visit: www.cfaitc.org/books

