Harvest of the Month

Network for a Healthy California

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.

Nutrition Facts

Serving Size: ½ cup tangerine, sections (98g)

Calories 52	Calories 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	4%
Dietary Fiber 2g	7%
Sugars 10g	
Protein 1g	
Vitamin A 13%	Calcium 4%
Vitamin C 43%	Iron 1%

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 ½ 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.

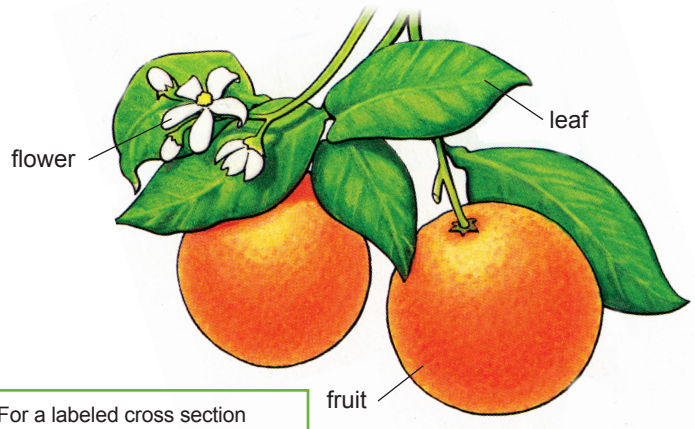
For more information, visit:
www.nal.usda.gov/fnic/foodcomp/Data/Flav/Flav02-1.pdf

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



For a labeled cross section of an orange, download the *Oranges Botanical Image* from **www.harvestofthemonth.com**.

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

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 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 ½ 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	2½ - 5 cups per day	4½ - 6½ cups per day
Females	2½ - 5 cups per day	3½ - 5 cups per day

*If you are active, eat the higher number of cups per day.
Visit **www.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

1. 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

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

CDPH California Department of PublicHealth

CHAMPIONS for CHANGE
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