

Harvest of the Month



Network for a Healthy California



Nutrition Facts

Serving Size: ½ cup avocado, sliced (73g)

Calories 117 Calories from Fat 89

	% Daily Value
Total Fat 11g	16%
Saturated Fat 2g	8%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 5mg	0%
Total Carbohydrate 6g	2%
Dietary Fiber 5g	20%
Sugars 0g	
Protein 1g	

Vitamin A 2% Calcium 1%
Vitamin C 12% Iron 2%

AVOCADOS

Health and Learning Success Go Hand-In-Hand

Eating a variety of colorful fruits and vegetables in daily meals can increase academic performance and cognitive functioning, especially for undernourished students. Help students eat more fruits and vegetables by encouraging them to participate in school meal programs, including the Summer Food Service Program. It can help students to eat more fruits and vegetables. Use *Harvest of the Month* to connect with core curricula and teach students about California's bounty of fruits and vegetables and how to lead a healthy, active lifestyle.

Exploring California Avocados: Taste Testing

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

- One ripe Hass avocado*
- Paring knife and cutting board
- Printed copies of avocado botanical image**
- White board and pens

*Refer to *Botanical Facts* on page 2 on how to choose ripe avocados.

**Download *Avocados Botanical Image* from www.harvestofthemonth.com.

Activity:

- Observe and record the color, texture, smell, and sound (when lightly tapped) of avocado.
- Slice avocado in half; observe and record observations of flesh (color, texture, smell, taste).
- Use the botanical image to compare and contrast the fruit around the outer peel and the pit; record observations on white board; discuss findings.
- Discuss how to choose ripe avocados and/or ripen at home.
- *Optional: Discuss ethylene gas and its role in ripening fruit.*

For more ideas, reference:

Fruits and Vegetables Galore, USDA, 2004.

Cooking in Class: California Stacker

Makes 32 servings at 1 cracker each

Ingredients:

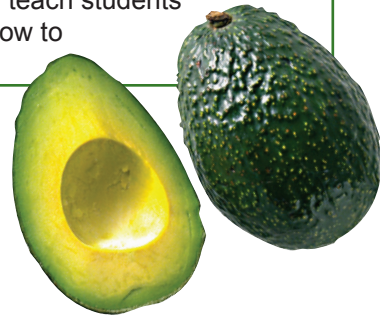
- 3 ripe avocados
- 1 (16-ounce) basket of small tomatoes (e.g., pear, cherry)
- Whole wheat reduced fat crackers
- Small plates or napkins

1. Cut avocados in half. Remove the peel and pit and place in a bowl.
2. Dice avocados with a knife and mash, leaving some chunks.
3. Stack 1 tablespoon of avocados on 1 cracker. Stack one tomato on top.
4. Serve immediately on plates or napkins.

Nutrition information per serving:

Calories 54, Carbohydrate 7 g, Dietary Fiber 2 g, Protein 1 g, Total Fat 3 g, Saturated Fat 0 g, Trans Fat 0 g, Cholesterol 0 mg, Sodium 50 mg

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



Reasons to Eat Avocados

A ½ cup of sliced avocados is:

- An excellent source of fiber and monounsaturated fat.
- A good source of vitamin C, vitamin B₆, folate, potassium, and vitamin K.
- A source of many vitamins and minerals including vitamin E, riboflavin, niacin, and magnesium.

Champion Sources of Monounsaturated Fat*:

- Avocados
- Canola oil
- Nuts
- Olives
- Olive oil
- Some cold water fish varieties (salmon, rainbow trout, cod, halibut, canned light tuna, anchovies, sardines)

*Champion sources provide a good or excellent source of healthy monounsaturated fat (at least 10% Daily Value).

For more information, visit:

www.nal.usda.gov/fnic/foodcomp/search/
(NDB No.: 09037)

What Are Fats?

- Fats are nutrients that help make cells and help absorb certain vitamins.
- There are nine calories in one gram of fat.
- Fats come in many forms and some are healthier than others.
- Monounsaturated and polyunsaturated fats are healthier fats. They are usually oils that help to lower “bad” cholesterol (LDL) levels and may raise the “good” cholesterol (HDL) levels.
- Both monounsaturated and polyunsaturated fats are found in plants, nuts, and fish.
- Saturated and trans fats are usually solid fats that raise the “bad” cholesterol (LDL). Trans fats also lower the “good” cholesterol (HDL).
- Saturated fats are normally found in animal products (e.g., butter, whole milk, beef, pork), while trans fats come from hydrogenated vegetable oils (e.g., shortening, margarine) used in packaged foods like cakes, crackers, and fried foods.
- Omega-3 fatty acids may decrease the risk of heart disease. This is the type of fat found in cold water fish (see *Champion Sources* on page 1).

For more information, visit:

www.mayoclinic.com/health/fat/NU00262

Botanical Facts

Pronunciation: äv’ə-kä’dō

Spanish name: aguacate

Family: Lauraceae

Genus: *Persea*

Species: *P. americana*



Avocado is an evergreen fruit tree of the flowering plant family Lauraceae. Originally called *ahuacatl* by the Aztecs of ancient Mexico, the fruit later became known as *aguacate* by the Spanish in the 16th century and nicknamed the “alligator pear” by English colonists who mistakenly substituted “alligator” for *aguacate* and added “pear” for the fruit’s shape. The term *aguacate* eventually evolved into *avocado* by Americans who could not pronounce the Spanish.

Many people think avocados are vegetables, but they are a fruit*. There are more than 80 different varieties grown in California, but the Hass avocado is the most common. The skin of Hass avocados turn dark purple-black when ripe. Other varieties are known as “greenskins” because their skins remain green and do not change color as they ripen. These include Fuerte, Zutano, Bacon, Pinkerton, Reed, and Gwen.

*Do *Student Sleuths* (page 3) to learn why avocados are botanically fruits.

For more information, visit:

http://food.oregonstate.edu/faq/avocado/faq_avocado3.html

How Do Avocados Grow?

Mature avocado trees grow to between 20 and 80 feet tall, depending on the variety, pruning, and soil conditions. If grown from seed, the tree will produce fruit after five to 20 years. It is biennial-bearing and may produce heavy crops one year followed by poor yields in the next. Intolerable to freezing temperatures, this evergreen tree can only grow in subtropical and tropical climates*.

To produce fruit within one to two years, commercial avocado orchards are planted using grafted trees and rootstocks. The species is unable to self-pollinate and most cultivars are clonally propagated (without seed reproduction). The avocado fruit does not ripen on the tree but will fall off and ripen on the ground. Commercial avocados are picked unripe and shipped to ripen on the store shelf.

Soil	Loose, decomposed granite or sandy loam; well-drained; mulch layers
Temperature	60 to 80 F
Exposure	Full sun; protected from wind
Irrigation	Moist
Planting	Minimum 10 feet in all directions
Propagation	Terminal or lateral grafting of seedling rootstocks
Harvesting	Hand-harvest by clippers attached to poles

*The Hass variety was developed to withstand near freezing temperatures (31 F) making it available year-round.

For more information, visit:

www.crfp.org/pubs/ff/avocado.html

www.ucavo.ucr.edu

How Much Do I Need?

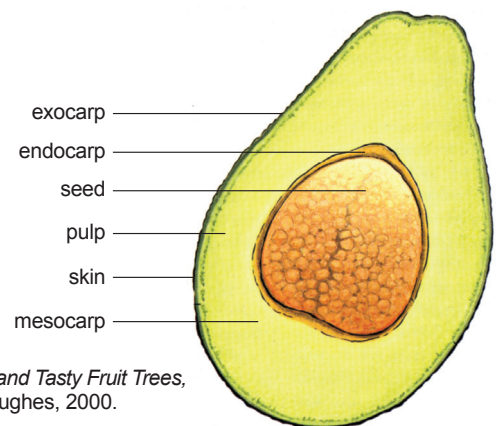
A ½ cup of sliced avocados is about one cupped handful. The amount of fruits and vegetables that each person needs depends on age, gender, and physical activity level. Have students find out how many cups they need to eat every day. Students can make a list of their favorite fruits and vegetables and describe what they like best about them. Encourage students to share lists with family members.

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.



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

To download reproducible botanical images, visit www.harvestofthemonth.com.

School Garden: Avocado Trees

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.

Students can grow their own miniature avocado tree at home. Have students write down the following steps and take home with materials and *Avocados Family Newsletter**.

What Students Will Need:

- One large avocado seed, washed
- Three toothpicks
- Glass jar
- Large pot (about 10½-inch diameter)
- Humus soil for pot

Activity:

- Use toothpicks to suspend seed (broad end down) over water-filled jar. Seed should be covered about one inch.
- Place jar in warm place out of direct sunlight. Replenish water as needed.
- Roots and stems will sprout in about two to six weeks.
- When stem is about seven inches long, cut back to three inches.
- When roots are thick and stems have leaves again, transplant to pot leaving the seed half-exposed.
- Water lightly and frequently. Keep soil moist, not saturated**.

*Download *Family Newsletter* from www.harvestofthemonth.com.

**Hint: Yellow leaves are a sign of over-watering; let plant dry out for a few days. Brown or fried leaves are a sign that there is too much salt in the soil. Allow water to run freely in the pot and drain for several minutes.

Adapted from: www.avocado.org

Just the Facts

- Avocado trees can grow as tall as 80 feet and produce as many as 400 pieces of fruit annually.
- The United States provides 6% of the world's avocado crop, ranking third behind Mexico and Chile.
- Almost half of American households purchase avocados. Consumers love the rich, creamy texture of the Hass avocado and growers favor it for its disease-resistance and year-round growing cycle.
- The Hass avocado is commonly misspelled as Haas.

Source:

www.cfaitc.org/factsheets/pdf/Avocados.pdf

Home Grown Facts

- California ranks first nationally in avocado production, growing more than 90% of the nation's crop.
- Avocados are grown mainly along the coastline of Southern California. San Diego County leads the State, followed by Ventura, Riverside, Santa Barbara, and San Luis Obispo counties.
- Although avocados are grown year-round, more than 75% of California's shipments take place between March and August.

For more information, visit:

www.cdfa.ca.gov

A Slice of Avocado History

- Native to the tropics of Central America, the avocado tree originated in southern Mexico and Columbia around 7,000 years ago.
- Spanish conquistadors were presented with avocados in Central America by the Aztecs and Incas in the 16th century.
- By the early 1800s, the avocado tree had spread throughout southern Europe, the Hawaiian Islands, Africa, and Southeast Asia.
- The avocado tree was first introduced to the United States in 1833 by Judge Henry Perrine who sent trees from Mexico to Florida.
- Dr. Thomas White of the California State Agricultural Society imported the first avocado tree from Nicaragua to Los Angeles in 1856.
- The California avocado industry was founded in the early 1870s when trees in Santa Barbara (imported from Mexico) began to bear fruit.
- Avocado grower Rudolph Hass developed the Hass variety in 1932. He grafted seedlings onto existing trees that had previously produced the Lyon variety.



For more information, reference:

Cool as a Cucumber, Hot as a Pepper, Meredith Sayles Hughes, 1999.

Student Sleuths

- 1 Some fats are considered good fats. What are they? What function do they play in the body? What food sources provide them?
- 2 Essential fatty acids are fats the body needs. Avocados provide sources of omega-3 and omega-6 fatty acids. Why are omega-3 and omega-6 fatty acids essential to our bodies? What are some of the health benefits they provide? Make a list of healthy foods that contain these essential fatty acids and identify which of these foods you eat daily and weekly.
- 3 All fruits are classified into two broad categories: dry and fleshy. The two main classes of fleshy fruits are drupes and berries. What kind of fruit is the avocado and why? Why is the avocado more commonly known as a vegetable?
- 4 Avocados do not ripen on the tree and are commonly shipped unripe to prevent damage. Research the process of how avocados are harvested and shipped to market. Find out how long it takes on average for avocados to ripen once picked. Develop an experiment to speed up the ripening process. Present your results using charts and timelines to California avocado growers (by e-mail or letters).

For information, visit:

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

www.ucavo.ucr.edu

www.cfaitc.org/factsheets/pdf/Avocados.pdf

Physical Activity Corner

Start off the day with basic activities to get the brain and body ready to learn. Before beginning, review the proper form for various stretches*.

- Students stand beside their desks.
- Start with a few basic stretching movements. Do each stretch for 15 seconds. (Examples: reach for sky, then touch toes, arm circles, wrist circles, ankle circles, gentle neck stretches, hamstring stretch, quadriceps stretch, standing calf stretch.)
- Lead students in one aerobic activity for 30 seconds. (Examples: jumping jacks, jumping, imaginary jumping rope, dancing.)
- Follow with a strength-building exercise. Do one or two sets with 15 repetitions. (Examples: overhead book press, biceps curls, heel raises, squats, lunges.)
- Practice balance exercises. Balance on one foot for 15 seconds, then switch legs and repeat.

*Review proper stretching form in *Power Up for Learning* (page 62).
Download resource 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.

Cafeteria Connections

- **Grades K – 5:** Show students how easy it can be to grow a tree from seed. Implement the *School Garden* activity on page 3. Put the avocado seedling prominently on display in cafeteria. Engage students by having them help you water and trim the stem. At the end of the school year, give the seedling to a classroom.
- **Grades 6 – 12:** The avocado has a rich, cultural history. It is used internationally in recipes and was considered a treasure in ancient times and commonly presented as a gift. Celebrate diversity in the cafeteria by sponsoring an "Around the World with Avocados" activity.

Ideas to Get Started:

- Involve students or entire classrooms.
- Display students' work in the cafeteria.
- Students select a country or group of people and research how the avocado has been used.
- Students develop a timeline and/or draw a cultural map to show findings.
- Students can include healthy avocado recipes.

For more information, visit:
www.cfaic.org/factsheets/pdf/Avocados.pdf



Student Champions

Encourage students to read Nutrition Facts labels and know what types of fats (trans, saturated, unsaturated) are in certain food items*.

- Record what foods are on the school campus.
- Analyze the nutrients for these items, noting fat content.
- Make a list of items that contain trans fats and high levels of saturated fats (e.g., above 20 percent of the recommended Daily Value).
- Write a letter to school officials requesting that healthy food items be sold on campus.
- Include reasons in the letter why these healthier items should be provided and list examples to replace less nutritious items.

Note: This activity can also be implemented by analyzing the sugar content of vending machine items (foods and drinks).

*To learn about fats, refer to *What Are Fats?* (page 2) and/or complete *Student Sleuths* (page 3).

Adventurous Activities

Science Investigations:

- Cut two avocados in half and remove seeds. Squeeze lemon juice over one half, apple juice over another, salt over another, and leave the fourth one alone. Discuss oxidation as a class.
- Cut open an avocado seed. Identify the seed parts: embryo, cotyledons, and seed coat. Draw the seed's cross-section*.
- Study the parts of a flower's matured ovary (the fruit). Cut open an avocado. Identify the three pericarp layers: exocarp, mesocarp, and endocarp. Discuss which facts classify the avocado as a fruit**.

*Download *Avocados Botanical Image* from www.harvestofthemonth.com.

**Coordinate activity with *Student Sleuths* (page 3).

For more ideas, visit:
www.harvestofthemonth.com

Literature Links

- **Elementary:** *Farmer's Market* by Marcie Rendon and Cheryl Bellville and *The World's Largest Plants: A Book About Trees* by Susan Blackaby.
- **Secondary:** *Americans in Agriculture: Portraits of Diversity* by USDA, *Cool as a Cucumber, Hot as a Pepper: Fruit Vegetables* by Meredith Sayles Hughes, *New Junior Garden Book* by Felder Rushing and *Seedfolks* by Paul Fleischman.

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



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