

# Harvest of the Month



Network for a Healthy California



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

With FITNESSGRAM® testing beginning at the end of winter, this is an ideal time to demonstrate your commitment to students' health and overall well-being. Help students maintain their focus by encouraging them to “rethink their drink”\* and reduce the amount of refined sugar they consume and instead eat more fruits and vegetables and get regular physical activity. *Harvest of the Month* connects with core curricula to give students the opportunity to explore, taste, and learn about the importance of eating fruits and vegetables. It links the classroom, cafeteria, home, and community to motivate and support students to make healthy food choices and be physically active every day.

\*For information on the ReThink Your Drink campaign, visit: [www.banpac.org/resources\\_sugar\\_savvy.htm](http://www.banpac.org/resources_sugar_savvy.htm)



## Exploring California Broccoli: Taste Testing

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

- ¼ cup each of broccoli prepared in a minimum of three ways (e.g., raw/fresh, microwave from fresh, microwave from frozen)
- Nutrition Facts labels\*
- Paper and colored pencils

\*Download Nutrition Facts labels for broccoli varieties (fresh, cooked, and frozen) from [www.harvestofthemonth.com](http://www.harvestofthemonth.com).

### Activity:

- Try each kind of broccoli noting differences in taste, smell, color, and texture.
- Compare the Nutrition Facts labels for the different broccoli preparations. Discuss which forms are more nutritious and why.
- Rate the prepared broccoli varieties from least to most favorite, using a numeric scale (e.g., 1 to 5).
- Survey other students and develop a pie chart depicting the different broccoli preferences.

### 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.

## Nutrition Facts

Serving Size: ½ cup fresh broccoli, chopped (44g)

Calories 15      Calories from Fat 0

% Daily Value

Total Fat 0g      0%

Saturated Fat 0g      0%

Trans Fat 0g

Cholesterol 0mg      0%

Sodium 21mg      1%

Total Carbohydrate 3g      1%

Dietary Fiber 1g      4%

Sugars 1g

Protein 1g

Vitamin A 5%      Calcium 2%

Vitamin C 65%      Iron 2%

## Fresh Broccoli and Dip

Makes 32 servings at ¼ cup broccoli and 2 tablespoons dip

### Ingredients:

- 2 cups fat free sour cream
- 1⅓ cups salsa
- ¾ cup chopped green onions
- 2 teaspoons garlic salt
- 8 cups broccoli, cut into small pieces
- Small plates and napkins

1. Combine sour cream, salsa, green onions, and garlic salt in a bowl. Stir well.
2. Place ¼ cup broccoli on each plate. Serve with 2 tablespoons dip.

### Nutrition information per serving:

Calories 26, Carbohydrate 6 g, Dietary Fiber 1 g, Protein 1 g, Total Fat 0 g, Saturated Fat 0 g, Trans Fat 0g, Cholesterol 1 mg, Sodium 165 mg

Adapted from: *Kids...Get Cookin'!*, Network for a Healthy California, 2009.

For recipes to cook with your students, visit: [www.cde.ca.gov/ls/nu/he/kidscook.asp](http://www.cde.ca.gov/ls/nu/he/kidscook.asp)

## Reasons to Eat Broccoli

A ½ cup of cooked broccoli is:

- An excellent source of vitamin A, vitamin C, vitamin K, and folate\*.
- A good source of fiber.
- A source of vitamin B<sub>6</sub> (pyridoxine), riboflavin, and potassium.

A ½ cup of fresh broccoli is:

- An excellent source of vitamin C and vitamin K.
- A source of vitamin A and folate.

\*Learn about folate on page 2.

### Champion Sources of Folate\*:

- Avocado
- Broccoli
- Dry beans
- Fortified whole grain cereals and breads
- Oranges/orange juice
- Spinach

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

### For information, visit:

[www.nal.usda.gov/fnic/foodcomp/search/](http://www.nal.usda.gov/fnic/foodcomp/search/) (NDB No: 11090 and 11091)

**BROCCOLI**

## What is Folate?

- Folate is a water-soluble vitamin.
- It works with vitamin B<sub>12</sub> (cobalamin) to form hemoglobin in red blood cells.
- Folate can lower a woman's risk of having a child with certain birth defects, such as spina bifida.
- Folate is also being studied for its ability to help protect against heart disease.
- Another function of folate includes protein metabolism.
- More than one-third of folate in the American diet comes from fruits and vegetables.
- Folate can be lost in foods during preparation, cooking, or storage. To retain folate, store vegetables in the refrigerator and serve fresh fruits and vegetables when possible. If cooking, use a minimal amount of water.
- Since 1998, flour has been fortified with folate. Many cereal grains (flour, rice, pasta, cornmeal) constitute important sources because they are fortified with folic acid. Folate bioavailability varies with food type and overall diet composition.

**Source:** American Dietetic Association Complete Food and Nutrition Guide, 2006.

**For more information, visit:**  
<http://jn.nutrition.org/nutinfo/>

## How Does Broccoli Grow?

Broccoli is a cool season crop. It can be grown as a spring or fall crop, but it is susceptible to frost, especially when the plants are small and tender. The optimal time for planting is with day temperatures between 60 to 70 F and night temperatures between 50 to 60 F. Temperatures below freezing for periods of 36 hours or longer will generally kill broccoli plants. Broccoli is most abundant from October through May.

Broccoli is usually grown from seed. Planting is done by direct seeding or by transplanting seedlings started in a greenhouse. Most varieties reach maturity in 100 to 120 days. Bright yellow flower clusters form on two to two-and-a-half foot tall broccoli plants. There are four sepals, six stamens, two carpals, and four petals. Flowers are pollinated mostly by bees.

Broccoli roots grow near the soil surface. Maintaining adequate moisture and nitrogen is essential for continuous rapid growth. Broccoli plants will grow in almost any soil but prefer an acidic pH level between 6.0 and 7.0. A well-drained, sandy loam soil rich in organic matter is ideal.

Since the roots are shallow, irrigation should be frequent but light. Broccoli is harvested during the cooler months in order to ensure the longest storage time. It is cut with eight to 10 inches of stem left intact and the heads are cooled immediately to prevent opening and discoloration.

**For more information, visit:**

<http://urbanext.illinois.edu/veggies/broccoli.cfm>

## Botanical Facts

**Pronunciation:** brōk'elē

**Spanish name:** brócoli

**Family:** Brassicaceae

**Genus:** *Brassica*

**Species:** *B. oleracea*

Broccoli is a plant of the cabbage family, Brassicaceae, formerly known as Cruciferae. It is related to cabbage, cauliflower, kale, collard greens, and Brussels sprouts. In agricultural terms, these vegetables are referred to as cole crops, meaning that they are grown for the heads they produce. There are many varieties of broccoli, but the most common varieties of *B. oleracea* are Calabrese and purple sprouting broccoli. Worldwide, they are marketed generically as "broccoli."

**For more information, visit:**

<http://food.oregonstate.edu/faq/uffva/broc3.html>

## How Much Do I Need?

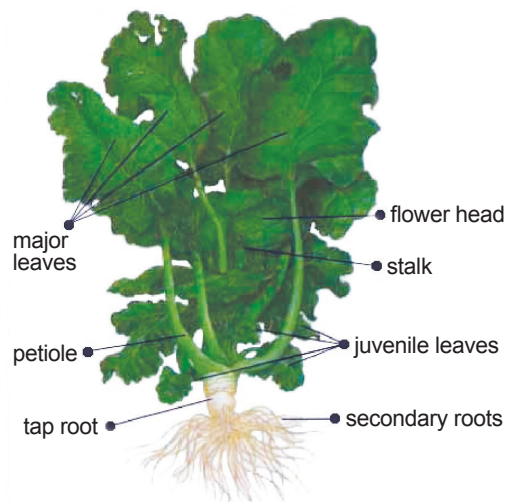
A ½ cup of broccoli is about the size of one cupped handful. Broccoli can be eaten in a variety of ways – fresh, cooked, cooked from frozen, or even pureed. All forms count toward the daily recommended amount. The amount that each person needs depends on age, gender, and physical activity level.

Have students visit [www.mypyramid.gov/kids](http://www.mypyramid.gov/kids) to find out how much they need to eat each day – and also to learn how fruits and vegetables are part of a healthy diet. Students can track how much they eat from each food group, set goals, and assess their progress. Have students review goals and progress each month.

## 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.



Source: <http://mann.broccoli.com/club/brocplant.htm>



## Cafeteria Connections

- Coordinate a schoolwide Fruit and Vegetable Challenge.
- Promote the challenge by visiting classrooms and providing a “Fruit and Vegetable Chart.” Order chart from [www.fns.usda.gov/tn/Resources/fvchallengepacket.html](http://www.fns.usda.gov/tn/Resources/fvchallengepacket.html).
- After lunch, students can record the number of fruits and vegetables they ate at breakfast and lunch, and as snacks, using their classroom’s Challenge Chart.
- Use the cafeteria bulletin board to track the progress of each participating classroom.
- Have other staff encourage participation by awarding extra points to students caught eating fruits or vegetables (in meals or as a healthy snacks).
- Provide incentives for winning classrooms such as a taste testing or smoothie party.

For more ideas, reference:

*Fruits and Vegetables Galore*, USDA, 2004.

## School Garden: Weather Watch

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.

Broccoli is a popular vegetable that is packed with vitamin C and vitamin K, and also contains calcium, folate, and fiber. This cool-weather crop is best grown in spring or fall, and tastes sweetest when it matures in autumn, when nights turn chilly\*.

Ask students to answer some predictive and research questions, such as:

- What do you think the weather will be like this year?
- What kind of climate do you live in?
- What kind of weather conditions are best for growing broccoli?
- Will the weather be good for growing broccoli in your area?
- What is the impact of heat on growing broccoli?
- What vegetables would grow best where you live?

\*Refer to *How Does Broccoli Grow?* on page 2 for more information.

For more ideas, visit:

[www.agclassroom.org](http://www.agclassroom.org)

## Student Sleuths

- 1 Look up the definition for phytochemicals. Identify three important phytochemicals found in fruits and vegetables. What are their roles in maintaining a healthy body?
- 2 Broccoli contains natural sodium. What is the benefit of natural sodium? What is the difference between natural sodium and table salt (sodium chloride)?
- 3 What does the dark green color of broccoli indicate?
- 4 How does plant spacing affect broccoli during growth?
- 5 What are the top three commercial broccoli-producing counties in California?
- 6 What are the various forms in which broccoli is processed and sold?

For information, visit:

[www.fruitsandveggiesmatter.gov/month/broccoli.html](http://www.fruitsandveggiesmatter.gov/month/broccoli.html)

[www.cfaic.org](http://www.cfaic.org)

<http://urbanext.illinois.edu/veggies/broccoli.cfm>

## Home Grown Facts

- California is the number one commercial producer of broccoli in the United States, producing more than 90 percent of the nation’s crop.
- Broccoli is available year-round in California and grown in four main regions: the south desert valley (Imperial and Riverside counties); the southern coast (Ventura, Santa Barbara, and San Luis Obispo counties); the central coast (Monterey, San Benito, and Santa Cruz counties), and the Central Valley (Fresno, Kern, Stanislaus, and Tulare counties).
- Monterey County produces nearly half of the state’s crop.
- Canada, Japan, Hong Kong, and Taiwan have been the top four destinations for Monterey County grown broccoli in recent years.

For more information, visit:

[www.cdffa.ca.gov](http://www.cdffa.ca.gov)

<http://ucanr.org/freepubs/docs/7211.pdf>

## A Spear of Broccoli History

Broccoli has been around for over 2,000 years and has been grown in the United States for more than 200 years. The son of Roman Emperor Tiberius was so infatuated with broccoli that he refused to eat all other foods except *broccoli à la apicius* (a mixture of broccoli, cumin, coriander seeds, chopped onion, oil, and sun-made wine) for an entire month.

Broccoli was first introduced to France in the 1500s and to England in the 1700s. Thomas Jefferson was an avid gardener and seed collector and grew broccoli at his Virginia home, Monticello, prior to becoming the third U.S. President in 1801.

Few people knew about broccoli in the United States until the 1920s, when the first commercially-grown broccoli was harvested in Brooklyn, New York. In 1923, two brothers named Stefano and Andrea D’Arrigo from Messing, Italy, made a trial planting of Italian sprouting broccoli in San Jose, California. A few crates were sent to Boston and by 1925 the broccoli market was established. The D’Arrigo brothers were the first commercial growers in the West to successfully grow and ship box loads of broccoli. They created a distinctive brand name for their broccoli — “Andy Boy” — and put a photo of Stefano’s two-year-old son, Andrew, on the label. Theirs was the first fresh produce company in the United States to use a brand name in advertising. Today, more than 90 percent of broccoli grown commercially for the United States is grown in California.



## Physical Activity Corner

Students need at least 60 minutes of physical activity every day to stay healthy and fit, both mentally and physically. While teaching nutrition, link how what we put into our bodies impacts how our bodies feel and perform. By eating vegetables that are high in vitamin C and calcium, students may build stronger bones, stronger immune systems, and stronger bodies.

Encourage students to be active every day. By eating healthy and being active all year long your students will be prepared for the FITNESSGRAM test. Remember the FITNESSGRAM is a state-required Physical Fitness Test administered in February, March, April, or May for students in grades five, seven, and nine. Work with your school's or district's physical education teacher to create plans for helping students prepare for this test.

For more information on the FITNESSGRAM testing standards, visit:  
[www.cde.ca.gov/ta/tg/pf](http://www.cde.ca.gov/ta/tg/pf)  
[www.cde.ca.gov/ci/cr/cf/documents/2009peframework.pdf](http://www.cde.ca.gov/ci/cr/cf/documents/2009peframework.pdf)  
[www.cdc.gov/nccdphp/dnpa/physical/index.htm](http://www.cdc.gov/nccdphp/dnpa/physical/index.htm)

## Just the Facts

- Broccoli was first grown in the Italian province of Calabria and named "Calabrese." It was then coined *brocco*, meaning branch or arm. *Broccoli* is plural and refers to the numerous flower-like shoots that form the head of the plant.
- As of 2008, the average person in the United States ate nearly six pounds of fresh broccoli per year, almost four times more than the yearly amount in 1980.
- A 2005 study\* found that broccoli was the sixth most common vegetable consumed statewide by 9- to 11-year-old children.
- Broccoli is one of the most popular garden vegetables to date, mostly because it is very easy to grow.
- Rich in minerals and vitamins (like folate), broccoli is also known as the "Crown Jewel of Nutrition."
- Broccoli is one of only a few vegetables available year-round.

\*From the California Department of Public Health.

For more information, visit:  
[www.agmrc.org/commodities\\_products/vegetables/broccoli\\_profile.cfm](http://www.agmrc.org/commodities_products/vegetables/broccoli_profile.cfm)

## Student Champions

Partner with a local grocery store and ask for a large supply of grocery bags. Have students promote broccoli and healthy eating habits in the community by writing fun facts, nutrition information, and stories, and drawing their own illustrations of broccoli on the bags. Brainstorm ways for using bags (groceries, book covers, gift bags, etc.).

UC CalFresh Nutrition Education  
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## Adventurous Activities

### Field Trip:

To generate awareness of the variety of fruit and vegetable products available at the grocery store, take students on a tour of the produce department. Contact the produce manager to help facilitate the tour and have students write down three questions in advance for a Q&A session.

### Nutrition Analysis:

- Ask students to track for five days how many servings they eat from each food group. Have them make a pie chart depicting the percentages of each food group. (Example: 20 percent fruits, 25 percent vegetables, 10 percent dairy, etc.)
- Ask students to create another pie chart breaking down just the vegetables they ate during the five days. (Example: 10 percent broccoli, 20 percent potatoes, etc.)
- What was the percentage of broccoli consumed across all food groups?

For more ideas, visit:  
[www.farmtoschool.org/ca/](http://www.farmtoschool.org/ca/)  
[www.cfaitc.org/caproduces/](http://www.cfaitc.org/caproduces/)

## Literature Links

- Partner with your school librarian to have students do a research project on California's agriculture.
- Provide students with a blank map of California.
- Students can use encyclopedias and other resources to fill in the produce item(s) that each county or region grows annually.
- Identify the top five agriculture-producing counties.
- Discuss why certain regions may be able to produce more crops than other regions.

For more information, visit:  
[www.cdfa.ca.gov](http://www.cdfa.ca.gov)

For book lists, visit:  
[www.harvestofthemonth.com](http://www.harvestofthemonth.com)



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