

Harvest of the Month

Network for a Healthy California



Nutrition Facts

Serving Size: ½ cup cooked garbanzo beans (82g)

Calories 134 Calories from Fat 18

% Daily Value

Total Fat 2g 3%

Saturated Fat 0g 0%

Trans Fat 0g

Cholesterol 0mg 0%

Sodium 6mg 0%

Total Carbohydrate 22g 7%

Dietary Fiber 6g 25%

Sugars 4g

Protein 7g

Vitamin A 0% Calcium 4%

Vitamin C 2% Iron 13%

DRY BEANS

Health and Learning Success Go Hand-In-Hand

Teachers have a strong influence in shaping students' eating habits. Parental influence is very powerful, but when teachers model healthy behaviors, like eating nutritious foods and being physically active, children begin to see healthy lifestyles as the norm. Incorporating *Harvest of the Month* fruits and vegetables into lesson plans is an exciting and interactive way for students to learn the concepts (and habits) that lead to a healthy life!

Exploring California Dry Beans: Taste Testing

Getting Started:

- Explore the grocery store for different dry bean varieties.
- Ask local farmers how they grow, harvest, and cook dry beans.

What You Will Need (per group):

- 1 cup each of canned beans, drained and rinsed: garbanzo, kidney, lima, and blackeye peas
- Printed Nutrition Facts labels for each item*

Activity:

- Make a 4x5 grid. Label columns by variety: lima, kidney, garbanzo, and blackeye peas. Label rows: look, feel, touch, smell, and taste.
- Examine each bean using the five senses. Use adjectives to describe findings in chart. Discuss similarities and differences as a class.
- Make another grid with the same labels for columns. Label rows: calories, fat, carbohydrates, protein, and vitamins.
- Examine Nutrition Facts labels and fill in chart. Discuss the similarities and differences as a class.
- Discuss how and why the nutrient values change when beans are used as an ingredient in other foods (e.g., refried beans).

*Download from www.harvestofthemonth.com.

For more ideas, reference:

http://extension.usu.edu/fsne/files/uploads/tips/Curriculum/legumes_taste%20ML%20edits.pdf

Cooking in Class: Three Bean Salad

Ingredients:

Makes 36 tastes at 2 tablespoons each

- 1 can (15-ounce) kidney beans, drained and rinsed
- 1 can (15-ounce) garbanzo beans, drained and rinsed
- 1 can (15-ounce) black beans, drained and rinsed
- ½ cup light Italian dressing
- Small paper plates and forks

- Combine beans in a medium bowl.
- Add dressing and mix well.
- Serve immediately on paper plate with fork.

Source: El Monte City School District, 2009.

For nutrition information, visit: www.harvestofthemonth.com

Reasons to Eat Dry Beans

A ½ cup of most dry bean varieties (garbanzo, kidney, lima) provides:

- An excellent source of fiber and folate.
- A good source of plant protein.*
- A good source of iron, potassium, and phosphorus.

*Learn about protein on page 2.

Champion Sources of Plant Protein:*

- Dry beans
- Peanut butter
- Peas
- Sunflower seeds
- Soybeans (edamame, tofu)

*Provide a good or excellent source of protein.

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



What is Protein?

- Protein is found in the bones, muscles, hair, skin, and most tissues and organs in our bodies.
- Proteins also form enzymes and hormones that help regulate bodily functions.
- Some proteins form antibodies that keep us healthy by fighting disease and infection. Others build connective tissues that hold our muscles and joints in place.
- Proteins are formed from amino acids, which are like "building blocks."
- Our bodies use 20 different amino acids. Our bodies make 11 of these, and they are called "nonessential." Nine are "essential" amino acids, meaning the body cannot make them and the foods we eat must supply them.
- When our bodies need something that is made up of protein (e.g., new cell, hormone), our bodies create it from both nonessential and essential amino acids.

Source: <http://fnic.nal.usda.gov>

For more information, reference:

www.eatright.org/cps/rde/xchg/ada/hs.xsl/nutrition_350_ENU_HTML.htm

Botanical Facts

Pronunciation: bēn

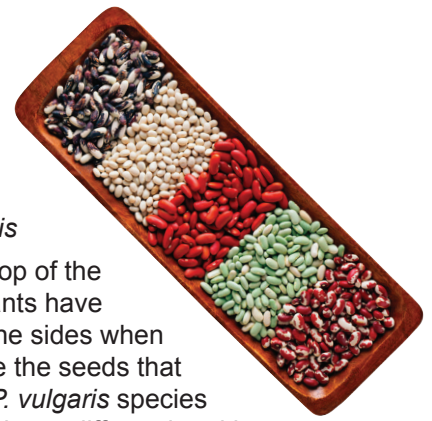
Spanish name: frijoles

Family: Leguminosae

Genus: *Phaseolus*

Species: *Phaseolus vulgaris*

Dry beans are an annual crop of the Legume family. Legume plants have seed pods that split along the sides when they are ripe. Dry beans are the seeds that grow inside the pods. The *P. vulgaris* species has the most varieties, which are differentiated by their decorative swirls of color and level of maturity at harvest. For example, kidney beans (*P. vulgaris*) are harvested when the pods and seeds are completely mature and dry. Lima beans (*P. lunatus*) are harvested from immature pods.



Species	Varieties
<i>Phaseolus vulgaris</i>	Black beans, kidney beans, pinto beans, navy beans
<i>Phaseolus lunatus</i>	Lima beans
<i>Vigna unguiculata</i>	Blackeye peas (cowpeas)
<i>Cicer arietinum</i>	Garbanzo beans (chickpeas)

For more information, visit:

www.cfaitec.org/Commodity/pdf/DryBeans/pdf

www.hort.purdue.edu/ext/ho-175.pdf

How Much Do I Need?

A ½ cup of dry beans is about one cupped handful. A ½ cup of dry beans makes about 1½ cups of cooked beans. The amount of fruits and vegetables you need each day depends on your age, gender, and physical activity level. Fresh, frozen, canned, and dried produce all count towards your daily recommended amounts. Remind students to eat a variety of colorful fruits and vegetables throughout the day. Set a good example by letting students see you eat fruits and vegetables, too.

Recommended Daily Amounts of Fruits and Vegetables*

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

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

How Do Dry Beans Grow?

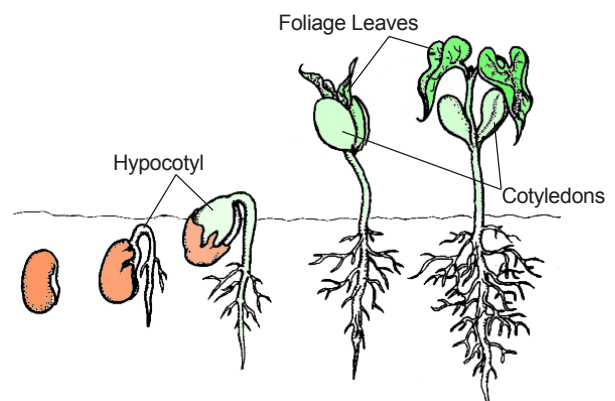
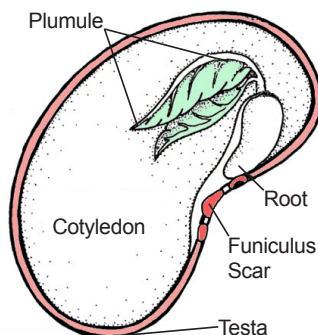
Dry beans are warm-weather crops that are usually planted in spring or early summer and harvested in fall. They are sensitive to cold temperatures and should be planted after any danger of frost. Most seed varieties tend to crack and germinate poorly if the soil's moisture content is too high. The soil needs to drain well. Water beans after planting or plant right before a heavy rain.

For a chart with information about how to plant and grow beans, refer to *Dry Beans Botanical Image* on www.harvestofthemoonth.com.

For more information, visit:

http://extension.unh.edu/resources/representation/Resource000604_Rep626.pdf

www.urbanext.illinois.edu/veggies/beans1.html



Source: www.botany.hawaii.edu/faculty/webb/Bot410/Angiosperm/Seeds/Seed-4.htm

School Garden: Bean Sprouts

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.

Materials:

- 1 single harvest package of garbanzo bean seeds
- Strainer
- Large glass jar
- Mesh top or cheesecloth and jar fastener
- Copies of bean botanical images from page 2*

Activity:

- Rinse bean seeds using the strainer.
- Pour ½ cup of bean seeds into glass jar. Add 1-1½ cups cool water. (Water level should be a few inches above beans.)
- Stir seeds in the water to ensure each bean is wet.
- Cover jar with mesh top and fasten securely.
- Let soak for at least 8 hours (e.g., overnight).
- Rinse bean seeds thoroughly. Drain completely.
- Place jar on its side on countertop, away from direct sunlight, in area with good airflow at room temperature.
- Rinse and drain for 3 consecutive days.
- When beans have sprouted for 1-2 days, they are ready for observation.
- Remove from jar and give each student a few sprouts. Compare with the botanical images on page 2. Name the parts of the bean. How are they the same or different?

Helpful Hints:

- Garbanzo bean seeds should be hard when starting the growing process.
- Do not use expired seed packets.

*Download botanical images from www.harvestofthemonth.com.

Adapted from: www.sproutpeople.com/seed/garbanzo.html

For more ideas, visit:

http://celosangeles.ucdavis.edu/Common_Ground_Garden_Program

A Pod in Bean History

- Beans have been around for thousands of years, perhaps as early as pre-historic times in Europe, Asia, and South America.
- Beans were found in Egyptian pyramids that were built more than 4,000 years ago.
- Prior to the Civil War, blackeye peas and other beans were used as food for livestock and were a staple in slaves' diets. As a result, blackeye peas and corn fields were spared by Union troops during the war.
- Around 1900, merchant ships from Peru brought beans to California.
- In the late 1920s, beans became a valuable California crop to use in rotation with beets, barley, and other non-legumes because they add nitrogen to the soil.

For more information, visit:

www.cfaitec.org/Commodity/pdf/DryBeans.pdf

www.loc.gov/rr/scitech/mysteries/blackeyedpeas.html

Student Champions

- Ask students to research how many plant protein choices are available in school meals on a weekly basis.
- Have older students advocate for more plant proteins in school meals.
- Do a cost comparison of two meals (cost from a dollar-and-cents perspective) or conduct a comparison from an ecological or food chain perspective. Use the data to support the request for more plant protein options.

For more ideas, visit:

www.californiaprojectlean.org

Student Sleuths

- 1 What are the characteristics of "complete" and "incomplete" proteins?
- 2 According to ChooseMyPlate, which two food groups are beans classified in and why?
- 3 Why do beans cause gas? How can this be prevented?

For information, visit:

www.hsph.harvard.edu/nutritionsource/what-should-you-eat/protein-full-story/index.html

www.usdrybeans.com

www.choosemyplate.gov

Home Grown Facts

- California farmers generally grow "specialty beans," including baby limas, garbanzos, pinks, blackeyes, large limas, and dark and light red kidney beans.
- Dry beans are often rotated with other crops because, like all legumes, they have unique root systems that provide a source of natural nitrogen to the soil.
- Blackeye peas grow best in warmer weather and are grown mainly in Fresno, Kern, Kings, Madera, and Tulare counties.
- Large lima beans, which thrive in cooler weather, are grown in the coastal valley counties of Monterey, Santa Barbara, Ventura, and Stanislaus.

Student Activity:

- Research a California grown bean variety, focusing on the geographical area in which it grows. Present findings to class.

Adapted from: California Foundation for Agriculture in the Classroom, 2008.

For more information, visit:

www.cfaitec.org

www.cdffa.ca.gov



Adventurous Activities

Social Studies and Math Solutions

- Interview family members about the types of beans that are commonly used in your family's recipes and within your culture.
- Make a graph or pie chart of the types of beans students eat at home.
- Ask students if they think the price of beans is always about the same throughout the year. Why or why not? Track the actual prices over the course of a year.

Adapted from: www.cfaitc.org

Cafeteria Connections

- Partner with school nutrition staff to find out if there are any restrictions to using more plant proteins (non-meats) in school meals. Have students brainstorm ways to integrate plant-based proteins into school meals.
- Invite school nutrition staff to discuss ways they use beans on the school menu, when they are offered, and why.
- Create posters promoting beans for display in the cafeteria.
- Distribute nutrition information for bean varieties during the lunch hour.
- Conduct taste tests of different cooked bean varieties.



Helpful Hints:

Complete in conjunction with *Student Advocates* on page 3.

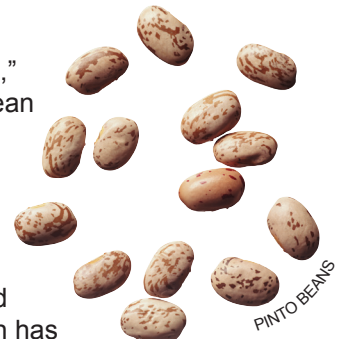
Literature Links

- Ask your school librarian to obtain and display books on the history and cultural usage of beans.
- Have students compare and contrast how beans were used in the past and how they are currently used. Include popular recipes, cultural beliefs and/or traditions, and other uses, such as creating art.
- Make the recipe from the *Cooking in Class* activity (page 1) and invite the librarian to read a book to class and lead the activity.

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

Just the Facts

- Although they are called a “pea,” blackeye peas are actually a bean and were once called *mogette* (French for “nun”). The black “eye” in the center of the bean was associated with a nun’s head attire.
- Garbanzo beans are also called “chickpeas” because each bean has a small beak that looks like a chick’s beak.
- Kidney beans are named because they are shaped like a kidney. They are native to Central and South America.
- Lima beans originated in Peru in 6000 B.C. and are named after the capital city of Lima.



For more information, visit:

<http://oklahoma4h.okstate.edu/aitc/lessons/extras/facts/veggies.html>
www.usdrybeans.com/home

Physical Activity Corner

Integrate this activity into the classroom as a way for students to strengthen bones and muscles and to increase cardiorespiratory endurance.

Activity:

- Associate the name of a bean with an exercise:
 - Kidney beans = jumping jacks
 - Garbanzo beans = hop in place
 - Blackeye peas = run in place
 - Lima beans = balance on one foot
 - Pinto beans = Squat down, touch toes, jump up
- Call out (at random) a variety of bean and do the exercise connected to it.
- Do each exercise for 30 seconds.

Go Farther:

To increase difficulty for older students, have them close their eyes while balancing or increase the speed of the activity.

Adapted from: www.teachingideas.co.uk/pe/beans.htm