

Dry Beans

Information compiled by the California Dry Bean Advisory Board

How Produced – Dry beans are an annual crop; most varieties are planted in the spring or early summer and harvested in the fall. They are often rotated with other crops because they, as with all legumes, have unique root systems which provide natural nitrogen to the soil. When the beans are mature, the plants are cut off at the root and raked into windrows to dry for seven to ten days. Bean harvesters pick up the plants, pods and beans, threshing out everything except the bean seeds which are escalated into a truck. The straw goes out the rear of the harvesters where it is scattered over the soil to provide organic matter for future crops.

At the warehouse, the beans are cleaned and placed in 100-pound sacks. They are then shipped to packaging and canning companies for further preparation for the consumer.

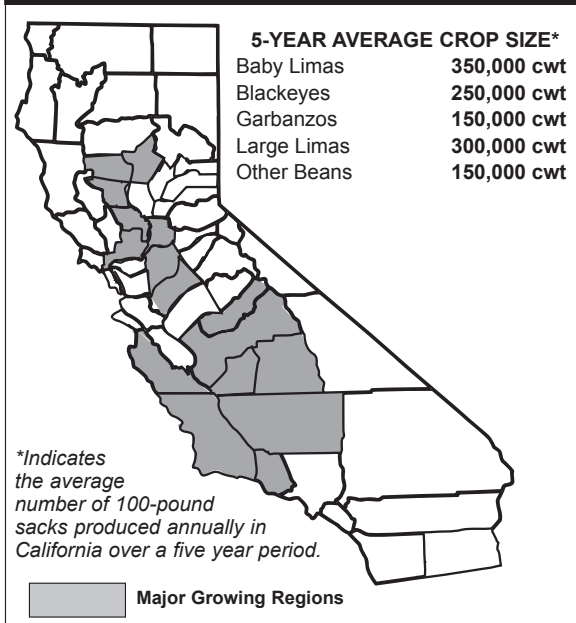
History – Dry beans have been produced for thousands of years. Most common varieties originated in Africa, Asia and the Middle East. Beans placed in the tombs of ancient Egyptian pharaohs have been found to be viable after centuries of storage. It is thought that the first beans were brought to America by nomadic tribes crossing the Bering Strait into Alaska. Large and baby lima beans originated in Peru, thus the name “lima.” They were brought to California on a merchant ship around 1900 and have been grown in the state since then.

Varieties – California producers generally grow “specialty beans,” including baby limas, garbanzos, pinks, blackeyes, large limas, and dark and light red kidney beans. Each variety has at least one unique characteristic that makes it useful for particular dishes. California’s dry summer climate allows producers to grow disease-free seed beans of over 50 varieties for planting in other areas of the country.

Commodity Value – Bean prices to the grower vary from \$25 to \$75 per 100-pound sack, with production varying from 12 to 45 sacks per acre depending on the weather, the variety and the grower. In a good year, the California average crop of 1.2 million 100-pound sacks will average \$48 per sack for a total value of approximately \$57.6 million.

Top Producing Counties – The type of bean grown in a certain area is dependent on the bean’s specific growing needs. Blackeyes, which like heat, are grown mainly in Fresno, Kern, Kings, Madera and Tulare counties. Large limas, which benefit from cool nights, grow in the coastal valleys of Monterey, Santa Barbara, and Ventura counties and in Stanislaus County where the cool evening breeze comes inward from the Bay Area. Kidney beans are grown in Colusa and San Joaquin counties, while other beans are grown in Sacramento, Solano, and Yolo counties. Baby limas are grown in Colusa, Fresno, Madera, San Joaquin, Stanislaus and Sutter counties. Garbanzo beans, sometimes called chick peas because of their shape, are grown in Fresno, Kings, San Luis Obispo and Santa Barbara counties.

Major Growing Regions and Yields of California Dry Beans



Nutritional Value – Dry beans, known mostly for their high protein value, are also high in fiber and many vitamins and minerals. When combined with small supplements

of grain, such as rice or corn, beans can supply all essential amino acids, the building blocks of proteins. Beans are low in fat and sodium and contain no cholesterol or sugar. With their high carbohydrate content, they digest slowly, satisfying hunger and energy needs for long periods of time. Most beans, especially blackeyes, contain high levels of folate, the B vitamin that can help prevent certain birth defects and heart diseases.

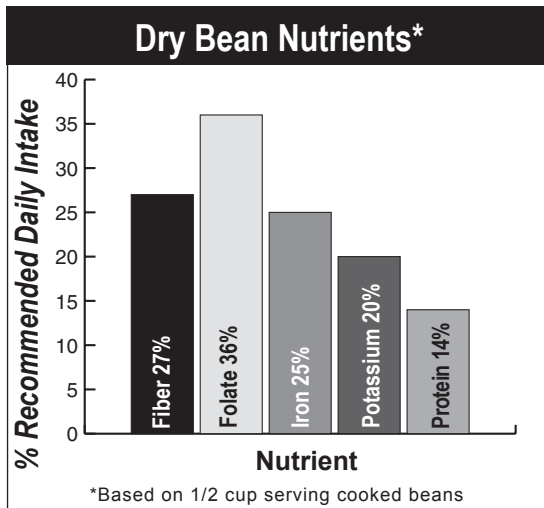
A cup of cooked or canned beans provides almost half the amount of iron recommended daily for men, and one-fourth of that recommended for women. Iron is important for building red blood cells to carry oxygen from the lungs to all parts of the body.

For additional information:

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Dry Beans Activity Sheet



Dry beans are used in many ways:

- Some eat blackeyes on New Year's Day to bring good luck.
- Japanese make a confectionary paste called *anko* from baby limas.
- Large limas, often called butter beans, are popular in the southeastern part of the United States, and are served with pork.
- Garbanzos and dark red kidneys are a healthy and colorful protein source in salad bars.
- Pink beans and light red kidneys are favorites in chili recipes.

Lesson Ideas

- Hold a class or school-wide chili bean cook-off.
- Discuss the importance of folate in one's diet and how beans can provide this nutrient.
- Create mosaics using a variety of dry beans.
- Use Biuret reagent to compare the amount of protein in various beans and other foods.
- Estimate and count the number of beans in a jar.
- Use beans as game pieces, counters or in sorting activities.
- Research the symbiotic relationship between rhizobia and bean plant roots.
- Research why beans produce gas and learn what can be done to reduce the amount of gas in bean dishes.
- Talk about traditions associated with beans.
- Soak beans and dissect them to learn their parts and functions.
- Plant different varieties of beans and note their characteristics.

Fantastic Facts

1. What is it called when the bean seed is removed from the rest of the plant during harvest?
 2. Beans are an annual crop. What does that mean?
 3. Which variety of bean is grown the most in California?
 4. For what reason, other than consumption, are dry beans grown in California?
 5. Name one or two foods that can be eaten with beans to produce all of the essential amino acids required for protein synthesis.
 6. True or false? Specialty beans, such as blackeyes and garbanzos, are grown in California.
 7. True or false? A variety of climates is one reason more than 50 varieties of beans are grown in California.
- 1) Threshing 2) They must be planted each year to produce
3) Large Limas 4) They are grown for seed beans, beans that are planted to grow bean plants 5) Corn and/or rice 6) True 7) True

Lesson Plan: Dry Bean Math Magic

Introduction: Beans provide protein, fiber, and a variety of other nutrients. In this activity, students will practice arithmetic skills using beans as the topic.

Materials: A copy of the following table, MyPyramid poster or handouts, calculators (optional), chart paper, markers.

1 lb. dry beans = 5 cups cooked beans
15 oz. can of beans = $1\frac{2}{3}$ cups cooked beans
$\frac{1}{2}$ cup cooked or canned beans = 1 serving
1 serving cooked beans = 115 calories
1 serving cooked beans = 8.5 grams protein

Procedure:

1. Review the MyPyramid recommendations with your students. Discuss the need for protein in one's diet.
2. Distribute the chart above or copy it on the chalkboard.
3. Divide the students into small groups and have them solve

the math problems below. Have each group show their work in a creative way on their chart paper and then explain their solutions to the class. As a class, discuss that there are variety of ways to solve a particular math problem.

Sample Math Problems

- How many people will a one pound bag of dry beans serve if each person were to get one serving of beans? (10 people)
- About how many people will one 15 oz. can of beans serve? (3 people)
- How much of a one pound bag of dry beans would you cook to feed each member of a five-member family one serving of beans? ($\frac{1}{2}$ bag)
- Your daily protein requirement is 0.4 grams of protein for each pound you weigh. How many grams of protein would a 100 pound person need to eat daily? How many servings of beans would this person need to eat if the entire protein source for the day came from beans?
- Assume one lb. of beans costs \$.80. What is the price per serving?

