

Green (Snap) Beans

Information compiled by the California Foundation for Agriculture in the Classroom

How Produced – Snap beans, also referred to as green beans or string beans, are edible pod beans that can be grown as bush beans or pole (climbing) beans. California farmers primarily plant bush beans.

Snap beans are a warm season crop, with an ideal growing temperature that ranges from 65° to 85°F. The seed is planted as early as March and as late as August, depending on first and last frost. Seed is planted mechanically by a tractor pulling a planter. The beans are typically planted at 80 pounds per acre, depending on seed size, with two rows on each bed.

Most varieties mature in 50 to 60 days. High temperatures (above 90°F) and late season rains can cause blossoms to drop without the opportunity for fruit to set, greatly reducing yield. Since excess water at any time during growth can increase the plant's susceptibility to root rot infection, many growers use drip irrigation.

Snap bean pods are harvested two to three weeks after blooming. Marketable pods are fleshy, tender, and green for only a short period; they will quickly become tough, fibrous, and overmature if not harvested on time. Pods of desirable length, shape and width are selected, harvested, and graded. Harvesting can be done by hand or by machine. Hand-harvesting allows for multiple harvests of a field, while machine-harvesting is a one-time operation because the plants are destroyed in the process.

Snap beans are highly perishable and should be cooled quickly after harvest. Some growers practice field packing so snap beans are quickly moved from field to cooler with minimum handling. Snap beans destined for further processing are transported to a facility where they are sorted, washed, and trimmed prior to freezing or canning.

History – The common bean was cultivated in ancient Mesoamerica approximately 8,000 years ago. Beans were even found in the mummy covering of a woman in a Peruvian cemetery dating back to pre-Inca civilization. Snap beans originated in the tropical southern part of Mexico, Guatemala, Honduras, and Costa Rica. They spread from this center of origin to North and South America long before European explorers ever arrived.

When early explorers first returned home with these, natives of Central and South America and Europeans used them

not as food crops but as ornamentals. They appreciated the butterfly-like blossoms in shades of red, pink, or white, but did not appreciate the tough texture of the pod.



Snap beans, by nature, had a fibrous strip that ran down the length of the bean. This portion had to be removed before it could be enjoyed. This led to the nickname "string beans." Botanists, however, found a way to remove the string through breeding and in 1894 the first "stringless" bean plant was cultivated. Today, commercial varieties of edible pod beans are grown without the strings.

Varieties – Snap bean varieties can be flat or round. The flat types, called Kentucky Wonder, include varieties such as Magnum, Greencrop, and Calgreen.

The round types, called Blue Lake, include Benchmark, Strike, and Landmark. Yellow-podded varieties are Goldrush and Slenderwax. A popular Italian flat bean variety is Romano. Snap beans also come in purple-podded varieties. The purple pods are flavorful, and turn green when cooked.

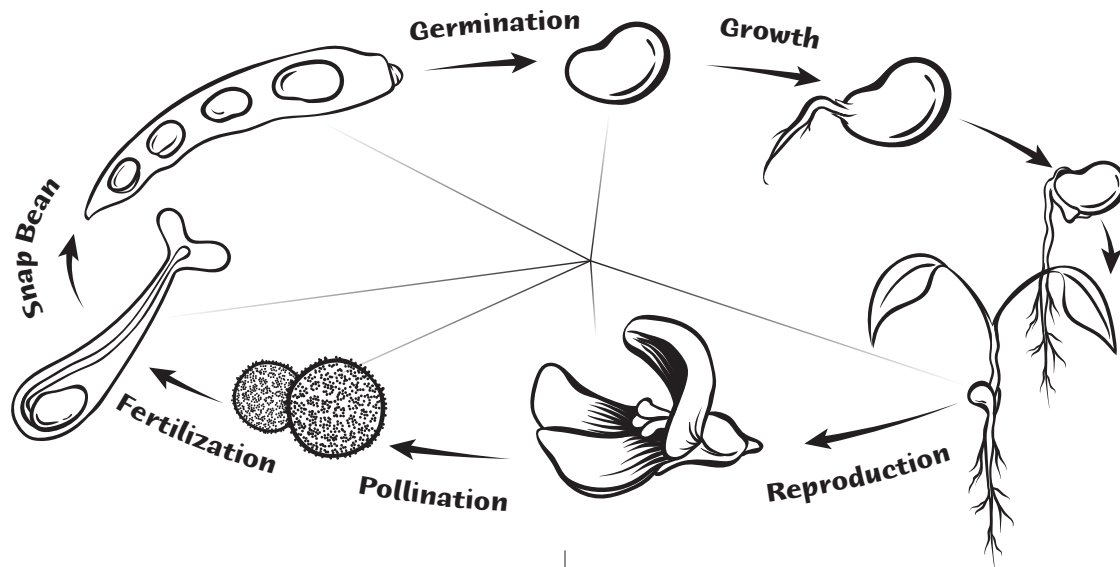
Commodity Value – California is ranked second in the nation for production of fresh market snap beans, while Florida is the top producer. Approximately 95% of the snap bean crop in California is marketed as fresh, with the remainder marketed for processing. In 2018, California's snap bean growers harvested more than 50,900 tons on 7,900 acres throughout the state. The state's crop value reached \$69 million in 2018.

Top Producing Counties – Snap beans are produced in many areas of California. Primary production areas include Tulare County, Riverside County, and Orange County.

Nutritional Value – A 1/2 cup serving of snap beans is a good source of fiber, folate, and beta-carotene. Our bodies use beta-carotene to make vitamin A, a nutrient important for vision, immune function, and skin and bone health. Snap beans also contain small amounts of calcium and vitamin C. Green, yellow, and purple snap beans are similar in taste, texture, and nutrition.

For additional information:
Orange County Produce
Website: ocproduce.com

Green (Snap) Beans Activity Sheet



Lesson Ideas

- Dissect a bean and record observations in a science journal. Include labeled diagrams.
- Germinate beans in a damp paper towel inside of a plastic sandwich bag. Tape the bag to a window and make daily observations of bean growth.
- Compare different varieties of snap beans. Make a table to organize data such as color, shape, number of beans, length, and taste.
- Measure the length, mass, and volume of snap bean pods. Create a class average and discuss how common traits have been established through science.
- Design an experiment that identifies the best practices for fresh snap bean storage. Share your findings with your school's food service workers.
- Taste frozen, fresh, and canned snap beans. Record similarities and differences.

Fantastic Facts

1. Snap beans were named for the snapping sound produced when breaking off the end of the pod.
2. The pod color of snap beans can be green, golden, purple/red, or streaked, but the beans inside the pod are always green.
3. Snap beans are nitrogen fixers, which means they draw nitrogen from the air and return it to the soil. Farmers often plant beans to replenish the soil.
4. The Asian Yardlong variety of snap beans have pods that measure up to 18 inches long.
5. The Spaniards initially used snap beans as ornamental plants because they found the bean pods tough, but very much liked the flowers.
6. Snap beans are the third most commonly grown home garden vegetable in the United States, outranked only by tomatoes and peppers.

Lesson Plan: Oh Snap! Finding the Right Soil for Snap Beans

Introduction: Snap beans are grown on many soil types in a pH range of 5.5 to 7.5. Well-drained soils are preferred. Excessively wet soils encourage root diseases and nutrient problems. Snap beans have a semi-shallow root system, and the crop requires frequent irrigation.

Objective: Students will investigate how snap beans grow in different soil types.

California Standards: CC Math: 7.SPC.8; NGSS: MS-LS1-5

Materials: Four identical containers (per group), potting soil, sandy soil, clay soil, snap bean seeds, tray for pots

Procedure:

1. Divide students into groups. Distribute snap bean seeds and containers.
2. Instruct students to fill each container with the same volume of soil, using each of three available soil types. Students must label each container properly.

3. The fourth container will have a student-designed mixture of the three soil types. Have students record the ratios and label the container.
4. Plant the snap beans in each container, at a depth of one inch.
5. Ask students to identify techniques for measuring plant growth. As a class, determine which techniques will be used to measure plant growth in this experiment. These techniques may include: measuring plant height, counting leaves, determining surface area of leaves, observing plant color, or identifying number of days to flower.
6. Apply the same volume of water to the plants at consistent intervals.
7. Routinely employ techniques to measure plant growth, and record measurements in science journals.
8. Use data to graph results and summarize findings.