

SOYBEANS

A COMMODITY FACT SHEET COMPILED BY THE LOUISIANA AG IN THE CLASSROOM PROGRAM



HISTORY

Soybeans date back 5,000 years ago to China. The Asian legume was cultivated from its wild state into a food crop. Soybeans first came to the United States in 1804, arriving aboard a clipper ship from China.

By the mid-1800s, farmers were growing soybeans as food for their livestock. By the 1900s, soybeans were growing on American farms as a food crop. At that same time, extensive research began on the bean.

George Washington Carver's work changed the way people thought about soybeans. It became much more than a forage crop when it was discovered there was value in the protein and oil. It was in the 1940s that soybean farming really took off in America. World War II devastated bean fields in China and U.S. farmers filled the gap. Henry Ford saw soybeans as a boon to various industries and made plastic for cars and other uses. The United States is now the No. 1 producer of soybeans in the world. We use about one-half of all the beans we grow, so we also are a large exporter of the beans. In Louisiana, soybean acreage remained small until the 1960s. Most of the acreage today is concentrated on the alluvial river soils of Northeast and Central Louisiana. The crop is well-suited to Louisiana because it can grow on a wide variety of soil types.

PRODUCTION

The soybean plant is a legume. A legume is a plant that has nitrogen-fixing nodules on its roots. The plants help replenish the nitrogen in the soil. Soybeans are a summer annual planted in May or early June. It usually takes 75-80 days for the beans to fully mature. Mature plants may reach a height of three feet. When mature, the foliage begins to shrivel and the leaves fall away. They are ready to harvest in September or October. Harvest must be completed before the bean pods burst open. All harvesting is done by machine. The harvested beans are taken to a storage bin with a dryer. The beans are dried to reduce the amount of moisture they contain so the beans will store well for long periods of time.

PROCESSING

During processing, soybeans are first graded, cleaned, cracked, dehulled, and rolled into flakes. The flaking ruptures the oil cells in the bean, which makes extracting the oil easier. Once the oil is removed, the flakes are processed into soy protein products or used to produce animal feed.



FOR MORE INFORMATION:

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[http://www.aitcla.org/files/
commodity_handout_sheets.pdf](http://www.aitcla.org/files/commodity_handout_sheets.pdf)

BUMBLE BEANS



MATERIALS

Each student will need:

- 3 or 4 soybeans
- 11" clear balloon (found in party stores)

DIRECTIONS

What happens when you put soybeans inside an inflated balloon?

Place soybeans in the balloon. Inflate the balloon $\frac{2}{3}$ full and knot it. Hold the balloon by the knot and twirl it to get the beans moving inside the balloon.

Ask students what they observe. What do they see, hear and feel? What creates the noises they hear?

What's Going On?

Many forces act on the beans as they move inside the balloon.

Frictional forces slow the movement of the beans. The force of gravity slows them on their ascent to the top of the balloon, and speeds them

on their descent to the bottom of the balloon.

Centripetal force is supplied by the surface of the balloon pushing the beans toward the center and it keeps the beans moving in a circular motion around the inside of the balloon.

The buzzing noise is produced as the beans roll along the inside surface of the balloon, causing the balloon to vibrate. The beans' speed determines the pitch. As the beans move faster, they vibrate more quickly, which our ears distinguish as a rise in pitch.

The clicking noises are the beans running in to each other.

Further Exploration

Have students rub their balloons against their pants leg or hair for 20 seconds. As the beans settle in their balloon, what do they observe? Do the beans come close together or push apart?

Rubbing the balloon generates static electricity. As positive and negative charges build up on the beans, similarly charged beans repel each other and oppositely charged beans attract.

Credit: *Ohio Ag in the Classroom Program*

PRODUCTS

Soybeans find their way into a variety of products. Oil products have many edible and technical uses. Soybean oil is found in 95 percent of prepared salad dressings, 85 percent of margarine, and 70 percent of solid shortenings. Industrial products include biodiesel, soy ink, soy crayons, and plastics. Whole soybean products include breads, baked goods, tofu, soy milk and candy products, just to name a few. Soybean protein products include bakery ingredients, baby food, cereals, food drinks, noodles, adhesives, cosmetics, paints and textiles.

NUTRITION

Soybeans are an excellent source of dietary fiber. Soyfoods are rich in protein, vitamins, minerals, calcium, and iron. Soybean oil is cholesterol-free. The protein in soybeans is complete, meaning it has all of the eight amino acids needed for human health. They are the only vegetable that contains complete protein. Medical research shows a strong connection between soyfoods and the prevention of heart disease, osteoporosis and cancer.