

# Most “Bean” – ificial

**Grade Level: 4 and 6**

**Approximate Length of Activity: 35-40 minutes**

## Objectives

### Teacher

1. Teach students about soybeans and how useful they are for everyone -- not just farmers.
2. Help students identify important dates in the history of soybeans.
3. Help students identify products made with soybeans.

### Students

1. Identify important dates in the history of the soybean, and place those dates in chronological order on a timeline.
2. Name products made with soybeans.

**Michigan Content Standards: (Social Studies)** 4-H3.0.1; 4-H3.0.5; 4-E1.0.1; 4-E1.0.3; 6-H1.2.5; 6-W1.2.2; 6-W1.2.3; 6-G2.2.2; 6-G4.2.1

## Introduction

Soybeans are produced for human food, consumer and industrial products, and livestock feed. Soybeans are one of the nation’s most fascinating and versatile edible products. In 2002, Michigan farmers harvested 2,030,000 acres of soybeans. From those acres, 78,200,000 bushels of soybeans were produced. From foods to ink, paints to plastics, soybeans have hundreds of everyday uses. Some of those products are probably in your kitchen or garage right now!

Even though soybeans have been a major food crop in China for over 5,000 years, soybeans were not grown in our country until the 1880s. At first soybeans were small, and their uses few, until a scientist named George Washington Carver began to find more and more uses for them. By 1904, he developed over 300 useful by-products of soybeans.

Soybeans touch our lives hundreds of times a day: when we eat, read a newspaper, get into our cars, and even when we open our front doors. Soybeans are often called magic beans because they produce so many products. Some of the products made from soybeans include: cereal, cooking oil, chocolate, hot dogs, candy, baby food, flour, soup, ice cream, vitamins, cookies, printing inks, soap, shampoo, fabric softener, paints, diesel fuel, plastics, cosmetics and pet food.

Some other uses for soybeans that scientists have discovered are: biodiesel fuel, soybean crayons, soy ink and building materials.

**Biodiesel Fuel** – Biodiesel fuel, which can be used in any diesel engine, is made from soybean oil. This fuel is clean-burning and biodegradable and can help cities meet federal clean air standards. Unlike petroleum diesel, biodiesel fuel emits a much lower amount of pollutants, is sulfur-free, and does not produce explosive vapors. Biodiesel fuel also provides similar horsepower, torque and miles per gallon as petroleum diesel.



**Soybean Crayons** – Soybean crayons are made with soybean oil instead of petroleum-based paraffin wax. Soybean crayons provide brighter and smoother colors that don't flake. These crayons can be found under the Prang Fun Pro™ Crayons name at many discount and office supply stores.

**Soy Ink** – Soy ink is made with soybean oil. Newspapers, commercial printers and government agencies use soy ink instead of petroleum-based ink, because it prints more paper per pound and offers better color reproduction. In fact, over 90 percent of all U.S. daily newspapers are printed using soy ink.

**Building Materials** – Biocomposite building material is made with soy flour and recycled paper. A fourth grade student from Minnesota contributed to inventing this new building material. Scientists continued research and development until they produced a board similar to wood, harder than oak and lighter than granite. Biocomposite building material can be used in countertops, furniture, plaques and much more.

## Materials Needed

- "Miracle Bean Boxes" worksheet
- "A Long Line of Soybeans" worksheet

## Activity Outline

1. Discuss the importance of timelines and why they are a useful tool.
2. Ask students if they know any products made with soybeans. Lead them into a discussion about soybean uses and some new products made with soybeans.
3. Have students complete the worksheet "Miracle Bean Boxes" to become familiar with products made with soybeans.
4. Have the students complete the worksheet "A Long Line of Soybeans".

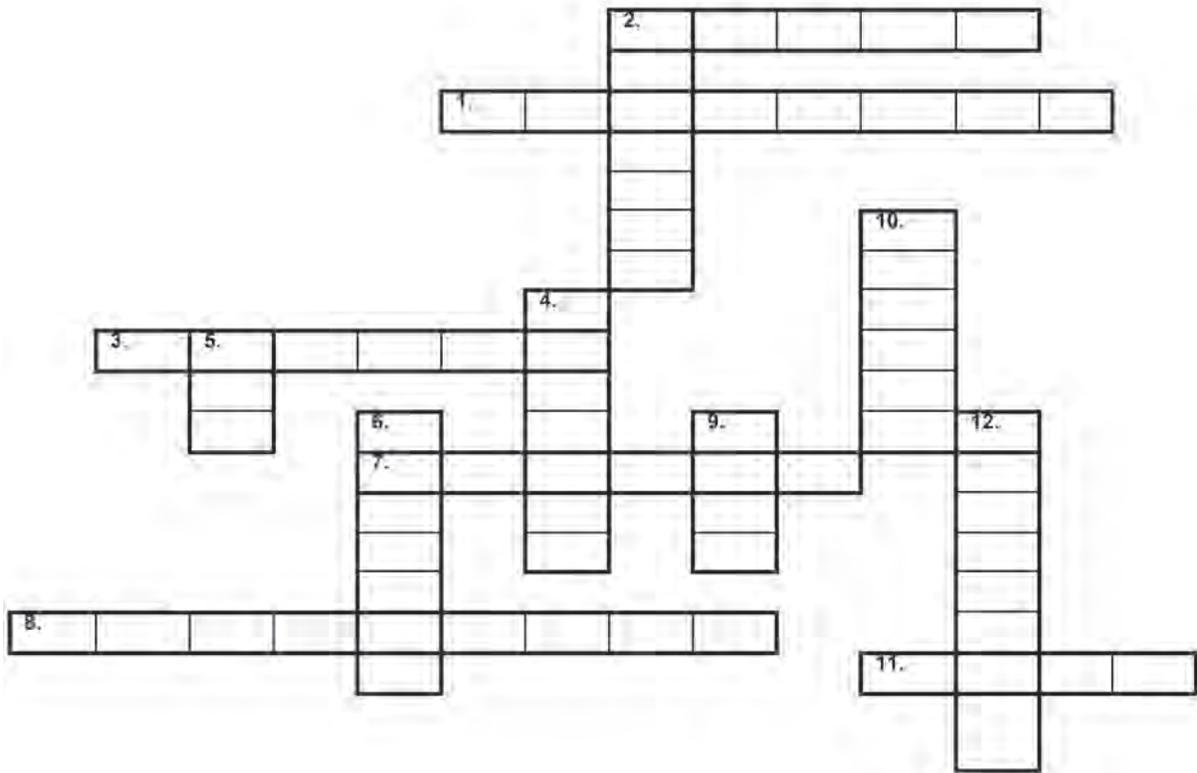
## Discussion Questions

1. How did soybeans become such an important commodity for Michigan farmers?
2. Name some soybean products.
3. Name some important events in the history of the soybean.

## Related Activities

1. Contact your county Farm Bureau to help find a soybean farmer to serve as a guest speaker for your classroom.
2. Write a three-paragraph essay about the importance of soybeans to the United States.
3. Visit the Michigan Soybean web site at [www.michigansoybean.org](http://www.michigansoybean.org).
4. Michigan Farm Bureau has an educational magazine geared for kids entitled "Pizza Ag Mag". This Magazine has activities such as where foods come from, games and stories. To obtain copies for your classroom contact the Michigan Farm Bureau's Promotion and Education department at (800) 292-2680, ext. 3202.
5. The lesson "Food and Fiber Products" located in the science section of this curriculum guide.
6. The lesson "A Bean Named Soy" located in the science section of this curriculum guide.

# Miracle Bean Boxes



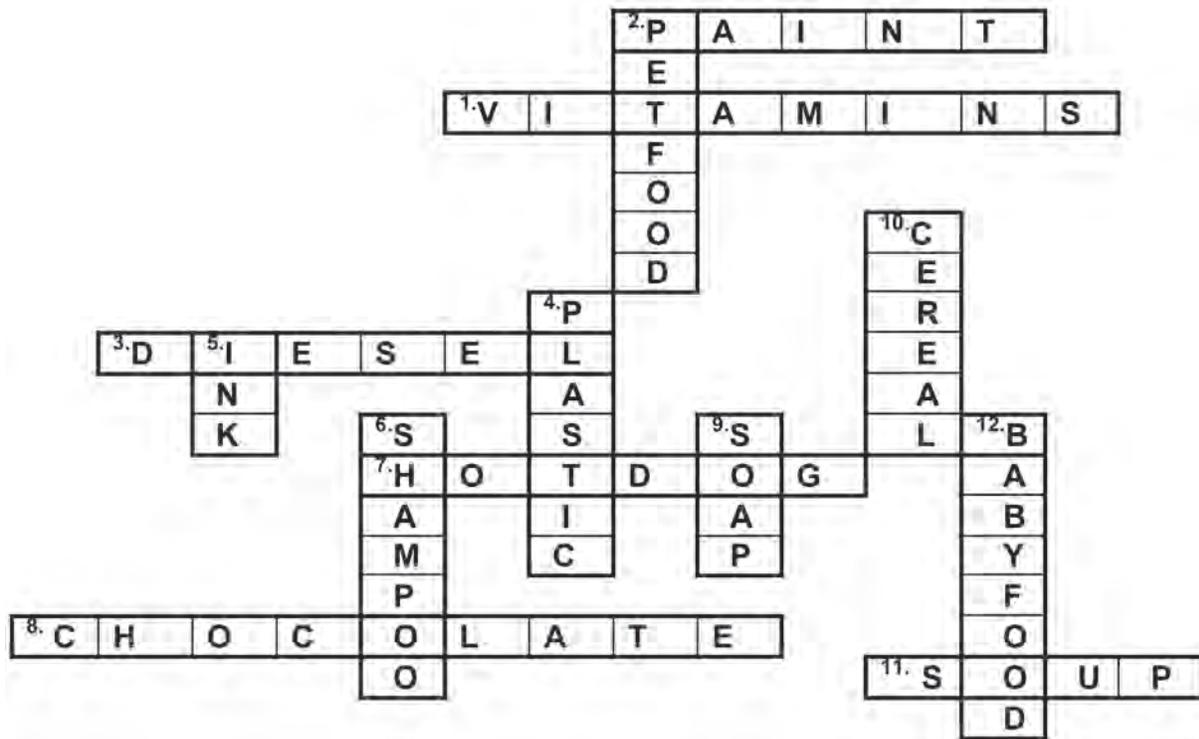
## Down

2. You feed your dog or cat with this type of food.
4. This product is used in your bicycle helmet to protect your head.
5. Soybeans are used in this industrial product to print newspapers.
6. This product makes our hair clean and shiny.
9. We use this to wash our hands, clothing and dishes.
10. Eat this for breakfast to start your day off right.
12. This food, containing soybeans to provide protein, is for very young people.

## Across

1. Take these every day to make sure you get your daily nutrients.
2. A coat of this product will freshen up a room.
3. This fuel is environmentally friendly.
7. Lots of people eat this food at a ball game.
8. This is used to make sweets and treats we love to eat!
11. When you're sick this will make you feel better.

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## A Long Line of Soybeans

Directions: Listed below are 15 different dates that are important in the history of soybeans. Put the dates in the proper order by placing a 1 in front of the event that happened first, a 2 in front of the next event, and so on.

- \_\_\_\_\_ 1904      George Washington Carver discovers that soybeans are a valuable source of protein and oil.
- \_\_\_\_\_ 164 B.C.      Soybean curd (tofu) is invented.
- \_\_\_\_\_ 1995      The New England Journal of Medicine reports that soybean protein consumption reduces LDL cholesterol (the bad cholesterol) by 12.9 percent and reduces total cholesterol by 9.3 percent.
- \_\_\_\_\_ 8000 B.C.      Animals are domesticated in the Middle East marking the birth of agriculture.
- \_\_\_\_\_ 1922      The first U.S. soybean processing plant is opened in Decatur, Illinois by A.E. Staley.
- \_\_\_\_\_ 1990      The United States grows 51 percent of the world's soybeans.
- \_\_\_\_\_ 1850      Civil War soldiers roasted soybeans in place of coffee beans which became scarce during the war.
- \_\_\_\_\_ 700 B.C.      The Chinese make soy sauce.
- \_\_\_\_\_ 1804      Soybeans come to America.
- \_\_\_\_\_ 1929      Soybean pioneer William J. Morse spends two years in China gathering more than 10,000 soybean varieties for U.S. researchers to study.
- \_\_\_\_\_ 2000 B.C.      Soybeans are first planted in China for food.
- \_\_\_\_\_ 1997      Prang® starts marketing crayons made from soybeans.
- \_\_\_\_\_ 1987      Soy ink is used to print newspapers.
- \_\_\_\_\_ 1940      Henry Ford demonstrates the strength of the soybean plastic he has developed by taking an axe to the plastic on one of his cars.
- \_\_\_\_\_ 1860s      U.S. farmers begin to grow soybeans for soy sauce and cattle feed.

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