



# BEANIE BABY

**Grade Level**

K-7

**Length of Lesson**

45 minutes

**Objective**

By the end of this lesson, students will have a better understanding of the process of seed germination.

**Materials Needed**

- Jewelry size resealable baggies (found in craft stores)
- Crystal Soil (order from Flinn Scientific at 800-452-1261)
- Hole Punch
- Water
- Measuring Spoons
- Soybeans
- Yarn
- Copies of student worksheet

**Standards**Common Core

CCSS.ELA-Literacy.RI.4.3; RI.4.4; RI.4.5; RF.4.3a

Social Studies

SS.EC.1.4; SS.EC.2.4; SS.EC.FL.1.4; SS.G.2.4; SS.G.3.4

NGSS

5-PS1-4

**Lesson Summary**

This lesson is designed to give students a hands-on activity that shows how seeds germinate. Students will create a “beanie baby” which allows them to observe not only the process of seed germination, but also the environment a seed needs for growth.

**Suggested Sequence of Events:**

1. Set Up: Pre-cut yarn into pieces long enough to tie as a necklace. Hole punch baggies above the seal.
2. Read [“Full of Beans: Henry Ford Grows a Car”](#) by Peggy Thomas to capture student interest. Ask if they know what other things we use soybeans for/in.
3. Read through AITC Soybean Ag Mag to learn about soybeans. Interactive online versions can be found on our website.
4. Pre-Activity Discussion: Hand out the student worksheet and ask them what a seed needs to start growing. Have them work individually to fill out the “Think” column to answer that question. Then have students pair up and share their ideas. They can add new information in the “Share” column. Then, as a whole class, have students share their ideas from the “Think” column. Go through the list one at a time and discuss whether a seed actually needs that to begin growing. Cross off the ones that are not necessary. Once your class comes to a final consensus, have each student write the class list in the “Share” column.
5. Complete the activity following the procedures:
  - Give each student a hole-punched baggie.
  - Have each student put 1/4 teaspoon of Crystal Soil into their baggie.
  - Add 2-3 soybeans into the baggie with the Crystal Soil.
  - Then add 1-2 tablespoons of water into their baggie.
  - Have them seal their baggies firmly so that they won’t leak.
  - Then have them insert one end of yarn through the hole of the baggie and tie the ends of the yarn in a knot to make a necklace.
  - Tell them to wear the beanie baby around their neck, tucked under their shirts (warm, dark place). Have them check their beanie babies several times a day to observe germination and growth!
6. Whole class discussion and reflection of activity.

# TEACHER RESOURCES

## Extension Ideas:

- Read Dr. Seuss' "[Oh Say Can You Seed](#)" by Bonnie Worth and discuss the different parts of plants. Have students record unknown words as you read and go back to look up definitions.
- Have students create a comic strip showing the process of germination.
- Have students write a story from the soybeans perspective.
- Show a labeled diagram of a soybean plant.
- **STEM:** Have students build and label a model using recyclable materials.
- Introduce or teach about photosynthesis.
- **Scientific Inquiry:** Have students think more deeply about plant growth and create their own question, hypothesis, and experiment to test! Will soybeans grow faster in Mountain Dew, Coffee, or water? Does the amount of light affect the growth of the plant? Do different fertilizers, potting soils, temperature, etc. affect plant growth differently?
  - Have students use the "Student Inquiry Sheet" to test their variables.
- Watch a time lapse video of a soybean growing.
- Watch a video from a local farmer discussing soybean growth and harvest.
- Take a field trip to a farm.
- Invite a soybean farmer into the classroom.
- Watch the TEDx Talk "[Sitting on Soybeans: Building the Bio-Based Automobile](#)" presented by Debbie Mielewski. Discuss the idea of inventions and creativity. Discuss the broad possibilities of careers in Agriculture. Discuss how Debbie is a female in a stereotypically "male" career and how she is breaking that stigma.
- Research the "accidental" invention of the Crystal Soil used in the activity (which happened in Peoria, IL)
- Go to [agintheclassroom.org](http://agintheclassroom.org) to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!





# BEANIE BABY

## STUDENT WORKSHEET

### Background Information

Soybeans are small, round seeds, each with a tiny hilum and made up of three basic parts. Each soybean has a seed coat, cotyledon, and the embryo. Each soybean plant generally reaches a height of 1 m (3.3 feet) and takes 80-120 days from sowing to harvesting. So how does a seed turn into a plant? Let's find out!

What does a seed need to start growing?

Think

Pair

Share

### Materials

- 1 jewelry size resealable baggie
- Measuring spoons
- 1/4 teaspoon of Crystal Soil
- 1-2 tablespoons of water
- 2 soybeans
- 1 piece of yarn

### Procedures

1. Open your jewelry-sized baggie.
2. Measure 1/4 teaspoon of the Crystal Soil and carefully dump it into your baggie.
3. Gently push your 2 soybeans into the Crystal Soil.
4. Carefully measure 1-2 tablespoons of water and pour into your baggie.
5. Seal your baggie firmly and make sure there are no leaks!
6. Insert one end of your yarn piece through the hole in the baggie and tie the ends of the yarn in a knot.
7. Wear your beanie baby like a necklace and tuck it into your shirt (it's a little chilly at first!).
8. Check on your beanie baby several times a day to observe germination and record its growth!

### Make a Prediction!

How long will it take for your seed to germinate?



# BEANIE BABY

## STUDENT WORKSHEET

### Vocabulary

**Cotyledon:** a seed leaf stored in a seed which are the first leaves the plant will have.

**Embryo:** part of a seed that develops into a new plant, including the stem, leaves, and roots.

**Germination:** the phase of plant growth when the seed begins to sprout.

**Hilum:** the scar on a seed marking the point of attachment to its seed vessel (the brown spot).

**Radicle:** the lower part of the axis of the embryo, the primary root.

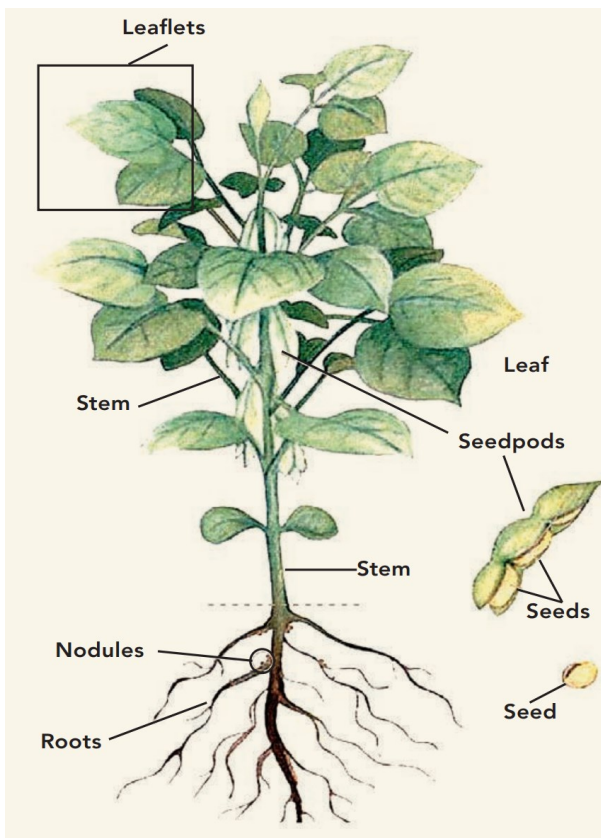
**Seed Coat:** the outside cover that protects the seed.

**Seed Pod:** a structure that holds seeds. Each pod typically holds 3-4 beans.

**Soybean Oil:** a pale yellow oil derived from soybeans by solvent extraction. Used as a food and in the manufacture of soap, candles, inks, paints, varnishes, etc.

**Stem:** the main stalk of the plant.

**Taproot:** a main root descending downward from the radicle and giving off small lateral roots.



### Observe, measure, record!

Use the table below to record your data.

Day	Measurement in cm	Observations