

Hanford Mills Museum is a historic site in East Meredith, NY. From its start as a seasonal sawmill in the 1840s, the Hanford family expanded the Mill to also include a gristmill, feed mill, woodworking shop, and hardware store. Today, Hanford Mills Museum shows how mills, which were once common in rural towns, operated.

You can watch a video version of these instructions online at: hanfordmills.org/seeds/.

Farmers grow most of the food that we eat, and the area where you live and go to school has a long history of farming. Most plants, even trees, grow from small seeds. A seed is made up of many parts. When you or a farmer plant a seed, it already includes almost everything that it needs to become a plant, but they do need soil, water, and eventually sunlight to grow.

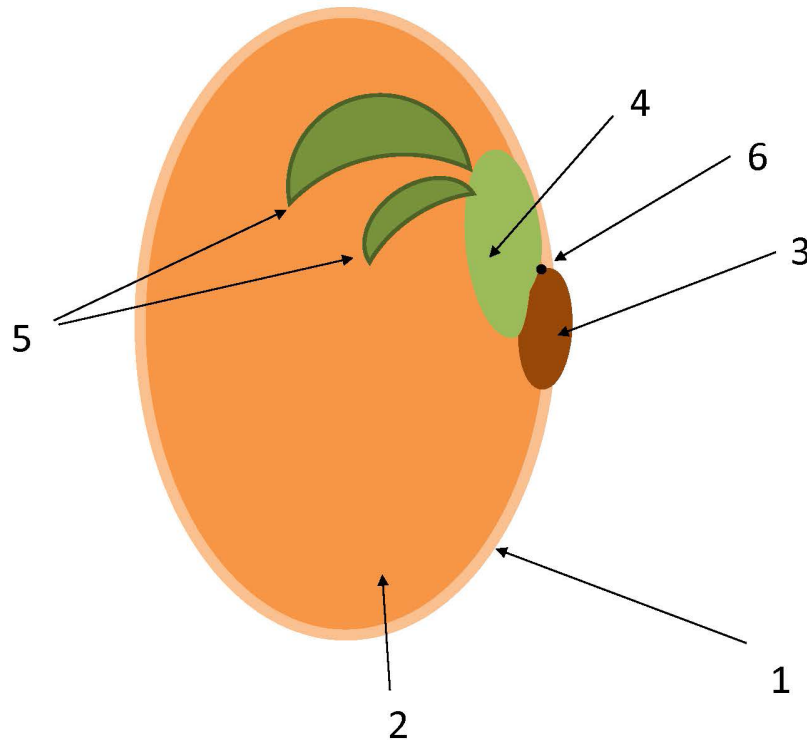
Materials:

- Seed Parts Worksheet
- Glue (CROP-provided)
- Scissors (CROP-provided)
- Bean seed
- Paper towel
- Sandwich bag (the same one that contains all of your other materials)
- Writing/drawing tool (pencil/marker)

Activity 1: Parts of a Seed

In this activity, you are going to look at the inside of a seed and learn about some of the important parts.

Parts of a Seed



The outside of the seed (1) is called the **seed coat**. It works like skin to protect the rest of the seed. Most of the inside of the seed is taken up by its food (2) called the **cotyledon** (cot-all-ee-dun). The small brown part is a scar from where the seed connected to its parent plant, called the **hilum** (3) and the small black dot is the spot where the seed can suck in water, called the **radicle** (rad-ick-ell)(6). The seed also comes with a very small **stem** (4) and **leaves** (5) that will grow after the seed **germinates** (sprouts).

1. Take out the worksheet from your kit.
2. Cut out all of the parts of the seed on the sheet.
3. Use the image above as a guide to put your seed together. You can glue your parts together to make the seed.
4. If you can, write the names of the different plant parts on your seed.

Activity 2: Growing a Seed

Now that you have learned about seeds, you are going to set up your own seed to germinate and grow! The seed in your packet is for a type of green bean called Royal Burgundy Bush Bean. This type of green bean has a purple colored pod, but the beans inside those pods are green. You are going to germinate this seed inside a plastic bag so that you can see the roots and stem grow, but if you would like to continue growing your green bean plant, you can move it very carefully into a pot with soil.

1. Moisten the paper towel with water.



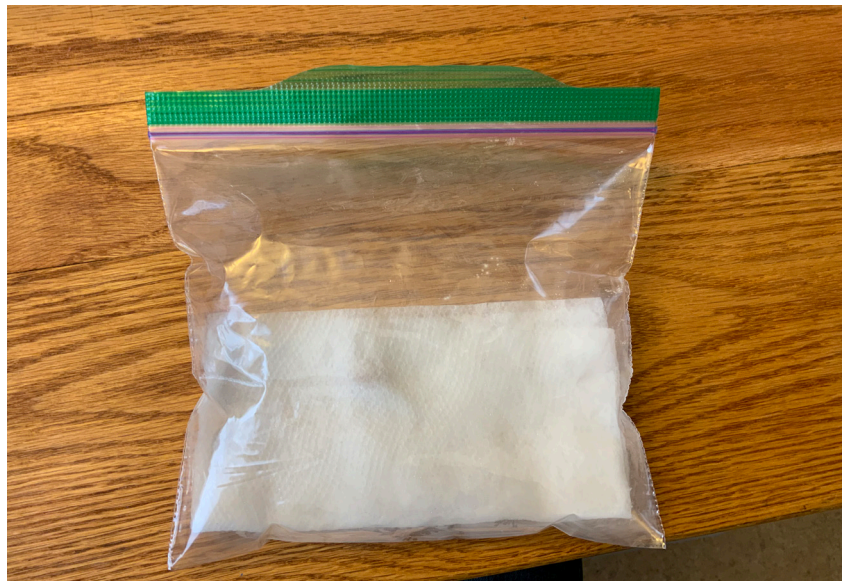
2. Place your bean seed on the paper towel and fold the towel in half so that the bean is covered on both sides.



3. Fill the sandwich-sized bag (the one that contained all of your materials) by blowing into it.



4. Place the paper towel with seed inside and reseal the bag, leaving some of the air that you blew into the bag.
5. Set the bag anywhere out of direct sunlight that stays at room temperature. The bag will act as a miniature greenhouse that retains heat and moisture for your seed.
6. Observe the seed each day to see if you can see the root, stem and leaves: you



should see the seed sprout in about 5-7 days.

7. If you move the sprouted seed to a pot of soil, be very careful with the main root when you plant it. Do not push the seed into the soil. Instead, make a hole in the soil for the entire root, hold it in place, and push soil gently over it.

Activity 3: Plant Marker

In many gardens, people label their plants with markers so that they can keep track of what they are growing. Even though our plant hasn't sprouted yet, you can still make a marker for it.

1. Take the index card out of your kit.
2. Fold the index card in half
3. Draw a picture of your plant and write some facts about it. Some of these facts include :
 - Beans are grown on every continent, except Antarctica
 - There are thousands of different types of beans.
 - This type of bean is originally from South and Central America.
 - People have farmed beans for thousands of years.
 - January 6th is national bean day.

