



Materials

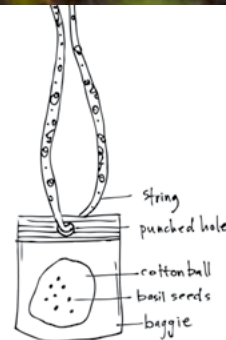
- Small craft plastic bags
- Cotton balls
- Basil seeds
- Black bean seeds (from the grocery store)
- String or yarn
- Hole punch
- Video clip



FIGURE 3-1 Soil Solutions is one of many North Carolina 4-H curricula that explore ideas in agriculture including plants, soils, insects, pollinators and more. To find your local agent: visit <https://www.ces.ncsu.edu/>

LESSON 3 BASIL SEED GERMINATION NECKLACE

This lesson comes from North Carolina 4-H's *Soil Solutions*, a school enrichment curriculum for the third grade focused on plants and soils. It is an easy hook activity to start the conversation on seed germination. Any 4-H curriculum is freely available to any NC educator through a local Cooperative Extension's 4-H Youth Development Agent.



ACTIVITY

Give each student a pinch of basil seeds and ask, "What is seed germination?" Having them still hold the seeds, watch a short video clip of a black bean germinating (growforit.ces.ncsu.edu). What did the students observe? What do they think seeds need in order to grow? List their ideas. Take a water dropper and squeeze a few drops onto their seeds.

Wait a few minutes and the seed coat should start to break down and form what looks like mucus. Tell the students that the basil seeds are starting to germinate.

To observe the process of seed germination, make a germination necklace. Give each student a small craft plastic bag with a hole punched in the top, a cotton ball, and a string. Demonstrate dipping the cotton ball into water, gently squeezing the excess water, and putting the basil seeds on the ball and slipping it inside the baggie. Thread the string through and tie around the neck. The germination necklaces will let students observe the basil seed growth. Dried beans also work very well for this exercise. They are readily available at a grocery store and are big enough to observe easily.

TALK IT OVER

Seeds must be given adequate moisture, oxygen, and a proper temperature for germination to occur. In order for the seeds to germinate, the seed coat must be weakened, so water may be imbibed or taken in by the seed. Gases are also exchanged through the weakened seed coat.

What other factors might affect seed germination? What is the evolutionary value to the seed for not germinating in the absence or overabundance of water? At low temperatures? Seeds have evolved with survival mechanisms that will inhibit seed germination when the conditions

are not favorable. Explore the effects of plant density, planting depth, light (lettuce seeds require red light), or dormancy temperature requirements (stratification). What is the value to the plant for having these limitations?

Have the students think about how seed germination relates to their own lives. How does knowing about the process of seed germination help you? When would you have had to know about seed germination before? Where can you go to get more information about seed germination? How could the things you learned today be used in other situations?