

Seeds, Miraculous Seed

Science

Materials

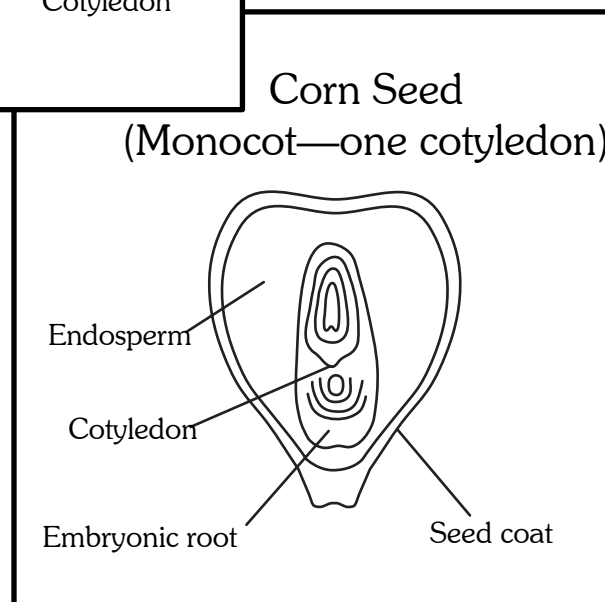
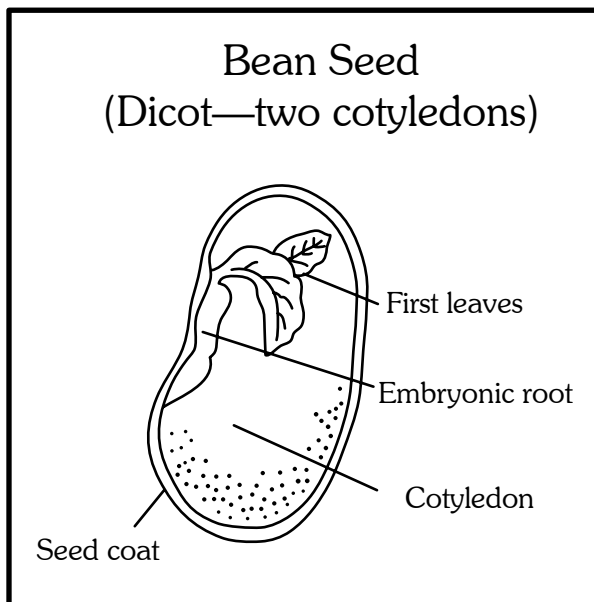
- ◆ Dry whole beans, corn, and pine nuts (optional)—one per student
- ◆ Dish of water for soaking

Background

What is inside of a seed? A new plant, a new tree. Will your students believe you? Seeds are relatively small (with the exception of coconuts), with a potential for growth into a productive plant or tree. How does such a small package contain such a potential? Here is a simple yet enlightening activity you can do with your students. Pick up some dry kidney or lima beans, available from any grocery store, and some dry whole corn (you may need to get this from a health food store, a feed and seed store—make sure it is untreated seed, or a store that stocks whole grains). For added interest, and if the season allows, also purchase some pine nuts, available in local grocery stores in the produce section throughout the fall and winter.

Activity

Soak the seeds (except the pine nut) in water for 24 hours at room temperature. Drain the seeds and pass out a bean, corn, and pine seed to each student. Carefully have them remove the bean seed coat, which, before the soaking, protected the seed endosperm or cotyledon (the food source for the embryo) and embryo, which will become the new plant. Next have the students gently split the bean seed—the two halves make up the cotyledon. The cotyledon is where the seed stores its food that is used for growth, until it gets its first true leaves and begins to make its own food. The students should be able to see a little lump near the edge of one seed. Don't touch it yet! Carefully study this lump (a hand lens may be useful). This is the embryo—the new plant! If you look closely you can see the delicate translucent leaves. Now separate the embryo from the cotyledon, place it on a flat surface and you cannot only see the leaves but also the embryonic root.



Time: 30 minutes

Grade Levels: 2–3

Grade 2

Core Content, Standard 3

Students will develop an understanding of their environment.

Objective 1

Investigate relationships between plants and animals and how living things change during their lives.

- Describe the life cycle of local plants and animals using diagrams and pictures.

Grade 3

Science, Standard 2

Students will understand that organisms depend on living and nonliving things within their environment.

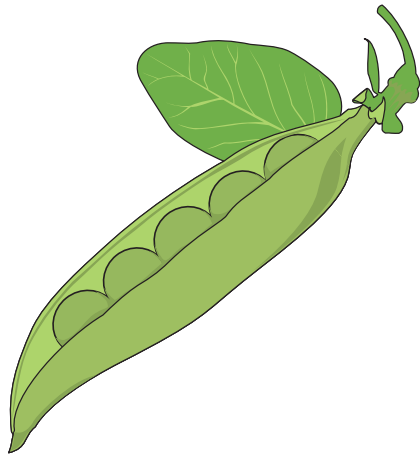
Objective 1

Classify living and nonliving things in an environment.

- Identify characteristics of living things (i.e. growth, movement, reproduction).

For contrast, ask the students to try and open the corn seed. You'll probably see a lot of squished seeds, but if they carefully remove the seed coat, and then press their fingernail into the endosperm, the cotyledon and the new embryo can be removed. Finally perhaps the most interesting seed to dissect is a pine nut. Ask students to gently remove the seed coat. They may have to crack this with their teeth. Next, tell them to push their finger nail through the endosperm and gently open the cotyledon to see the embryo—a baby tree.

To summarize, ask students these questions: What are seeds used for? Do we eat any seeds or are they used just to grow new plants? Yes! We eat seeds: peas, beans, peanuts, sunflower seeds, walnuts, cashews, wheat used in bread, poppy seeds, sesame seeds, not to mention the oil that comes from seeds. Seeds truly are a miracle with the potential for life and the ability to sustain lives—like yours and mine.



Teacher Notes: