



Grade Level: K-5

Essential Skills: 5, 9

NGSS: K-LS1-1, K-ESS2-2, 1-LS1-1, 2-LS2-1, 4-LS1, 5-LS1

CCSS: L.K.5, SL.K.1, SL.K.5, SL.1.4

Time: One class period

Materials:

Grow a Bean in a Bag Kit* or:

- 5 colored water beads per student
- One small jewelry bag per student
- Bean seed per student
- 1 Tablespoon
- Distilled water

* Free kit with all materials available to Oregon educators; order from our [Lending Library](#).

AITC Library Resources:

Books: *Apples to Oregon*, *Apples of Your Eye*; *Apples: A True Book* *Oh Say Can You Seed?: All About Flowering Plants*

More Lessons:

Turf Buddies
Seed, Soil, Sun
Living Necklaces
Garden in a Glove

Grow a Bean in a Bag

Description:

Students grow a bean in a bag with water beads representing the basic elements plants need to grow and thrive.

Directions:

For a great way to begin this lesson, read an age-appropriate book, such as *Apples to Oregon*, written by Oregon author Deborah Hopkinson. This “tall tale” is based on a real person who lived in Oregon, Henderson Luelling. Plants need our help to survive sometimes, and this tale is no exception!

Day Prior to Class: Prepare the Water Beads

You will need to hydrate the water beads the day prior to completing the activity with students. The water beads will be fully saturated in 6 hours and will stay saturated for approximately 5 days. Use the directions below to saturate the water beads if you are using a kit from Oregon Agriculture in the Classroom’s library. If you are using water beads not from Oregon Agriculture in the Classroom, follow the manufacturers directions on the label.

- 1) For 1/4 teaspoon of beads (the amount in our kit), add 3 Tablespoons of distilled water to the zipped plastic bag.
- 2) Seal the bag and let sit for 6 hours before completing the activity.

Activity Directions

- 1) Each student receives a small bag, bean and five water beads (blue, red, clear, yellow, and black).
- 2) Ask students to choose the sunshine bead (yellow), and place the water bead in their small bag and give them facts about the sun. **See below.**
- 3) Continue with the next three water beads - black (nutrients), blue (water), and clear (air). These four beads represent the essential elements plants need to live.
- 4) Next, have them add the red water bead, which represents the care and nurturing that goes into raising plants.
- 5) After, have students add the bean to the bag.

6) After the bags are made, ask them again to review what each water bead represents:
Sun/Light - yellow water bead - the source of heat and light on Earth and it sustains life on our planet.

Nutrients - light blue water bead- these are the vitamins and minerals plants require for healthy growth and development and are transported by the roots. They come in the form of different substances such as fertilizers.

Water - dark blue water bead - is a clear, odorless and tasteless liquid. Water is essential for plants and animals to live. Living organisms are made up of mostly water - plants typically are 90+% water.

Air - clear water bead - is a colorless, odorless, tasteless gas. Air provides plants with life giving carbon dioxide. Plants “breathe in” the CO2 through their leaves and “breath out” oxygen. .

Care - pink water bead - represents the care and nurturing on which plants thrive.

Extension Activities:

- 1) Compare and contrast the needs of a human and plant. Draw two circles and label one “humans” and one “plants”, list the needs of each, and the common needs in the overlapping area.
- 2) Have students write or draw pictures about how plants can change their environment to meet their needs. Examples: sunflowers turning with the rising and setting sun, tree roots pushing up concrete, fleshy leaves to hold more water, or seeds that stick on fur to move away.

