

# Project BudBurst



Classroom Activity  
www.budburst.org

## Classroom Activity: Root Roundup

**Time:** One 60-minute class period

**Level:** Grades K-4

**Overview:** In this activity students will make observations of roots and learn about fibrous and tap root systems.

**Materials:**

- Weeds (with roots) from the schoolyard or other nearby location
- Photocopied images of the plant samples
- Blank paper

**Education Standards:** Available in the *Teacher Implementation Guide (Grades K-4)*

### Preparation

Uproot several weeds from the schoolyard or other nearby location, some with fibrous root systems and some with tap root systems (for more information, see the “Background Information” section on page 2). Pulling plants is easier when the soil is damp. Then make a photocopy of each “mystery plant.”

### Activity

1. Cover the top portion of each “mystery plant” photo, hiding all but the root system, and show the photos to the students. Tell the students these plants came from the schoolyard and ask if they can figure out which kind of plants they are. What hidden parts would they need to see to identify the plants?
2. Take the class outside to the schoolyard and pull several weeds out of the ground to show students the roots.
3. Show students which plants are not to be uprooted in the schoolyard. Talk to students about weeds, explaining that they are plants that are unwanted in a given location. Then have the students pull up assorted weeds they think might match your “mystery plants.” This activity helps students see that certain types of plants have the same root system.
4. To keep up interest in pulling up really tough plants out of areas where they are not wanted, have a contest for students to find the plant with the longest taproot. Plants can have a fibrous root system, a tap root system, or a combination of both.
5. Back in the classroom, uncover your “mystery plant” pictures and see if the students can now identify them.
6. Compare the root systems. How are the roots different? What might these roots do for anchoring the plants? From where would the different roots be collecting water and minerals?

### Suggested Extension Activities

- Challenge students to keep a straw standing straight up in a tub of soil without any above-ground support. Provide them with various materials such as popsicle sticks, straight pins, and string so

# Project BudBurst



Classroom Activity  
www.budburst.org

they can build support for the straw. Test their structures using a fan and gentle tapping on the straw. Compare the structures they built to the roots of a plant.

- Scoop a hollow out from the top of a carrot. Place a 2" long piece of straw into the hollow and seal it in place with melted candle wax. Suspend the carrot in a glass of water using toothpicks. Observe what happens to the straw after a few days (it fills with water). Water moves through roots via osmosis and it is the osmotic pressure that pushes water into the straw.

### Background Information

The root of a plant usually grows down into the ground. Its main purpose is to take in water and minerals from the soil. These are absorbed through tiny, tube-shaped hairs called root hairs. The root also acts as an anchor, holding the plant firmly in the soil. Many plants, such as carrots, store excess food for the plant in the roots in case of future need.

Roots can be many shapes and sizes, depending on the plant from which they grow. Some have particular tasks, such as allowing the plant to cling to other objects. A tap root, or primary root, is a large root with smaller ones growing out of it. These small roots are called lateral roots, or secondary roots. Many vegetables, such as carrots and turnips, are swollen tap roots and are known as root vegetables. Fibrous roots are a system of many equal-sized roots, all of which produce smaller lateral roots.

Some examples of plants with tap roots are dandelion and kudzu. An example of a plant with fibrous roots is white clover.

**Source:** Adapted from *Exploring the Native Plant World*, developed by the Lady Bird Johnson Wildflower Center in Austin, Texas and *Teaching Plants from Root to Seed*, developed by the Denver Botanic Gardens in Denver, Colorado

This teacher resource was made possible, in part, by support from the National Geographic Education Foundation.

