

Catching Water

Overview: Water is important for all living things, and the plants in your garden are no exception. Plants absorb water through their roots so your soil is an important player in making sure your plants have what they need to survive. This fun experiment you can do at home or in a school garden classroom explores how your soil conditions impact water availability and soil erosion.

Materials:

- 4 old 9"X13" cake pans
- garden soil
- compost
- mulch
- fast growing seeds such as grass or beans
- plastic trays
- measuring cups

Approximate Time to Complete: 3+ weeks

Location: Outdoors

Ages: 5-10

Season: Spring to Fall

Instructions:

Water is vital for your plants. Soil, or more accurately the pore spaces between the particles of soil, act as the water reservoir for the roots of plants to draw from as needed. However sometimes our work in the garden results in compacted soil with less pore space. This decreases the soil's ability to absorb life sustaining water effectively. If soil is not porous enough, water (from rain and irrigation) will simply run off across the surface without soaking in, leaving plants without enough water to thrive and often eroding the soil and taxing drainage systems in the process.

There are a number of gardening practices to help your soil increase its ability to absorb and retain water including:

- Amend the soil with organic matter to increase pore space.
- Cover soil with a layer of mulch.
- Install plants with deep and fibrous roots.

Use the following experiment to explore these garden recommendations:

1. Collect 4 old 9" X 13" cake pans. Fill all 4 pans with soil from the garden. As a control, leave one pan filled only with soil. In the second pan, mix organic matter such as compost into the soil. In the third pan, plant fast growing seeds such as beans or grass (this needs to be done a few weeks ahead of time so the plants have time to become established). In the last pan, cover the soil with a layer of mulch.
2. Set the pans on a table at a slight angle (10 to 20 degrees) with the bottom end placed in a plastic tray. Use a watering can to simulate rain on your different "pan landscapes," exposing each pan to the same amount of water at the same rate of delivery.

3. Compare the water runoff from each landscape. Measure the amount of water collected and record the amount of soil lost by erosion. Which landscape held on to the most water? Which one held on to the least water? Look around your garden and yard to find similar soil conditions in your landscape and decide if you need to make any changes to maximize the water being absorbed by your soil.
4. Further experiments can be set up expanding the variations of landscape variables described above (for instance a pan of soil with compost and plants, soil with compost, plants and mulch, etc.) or you can add new variables such as sand and rock.