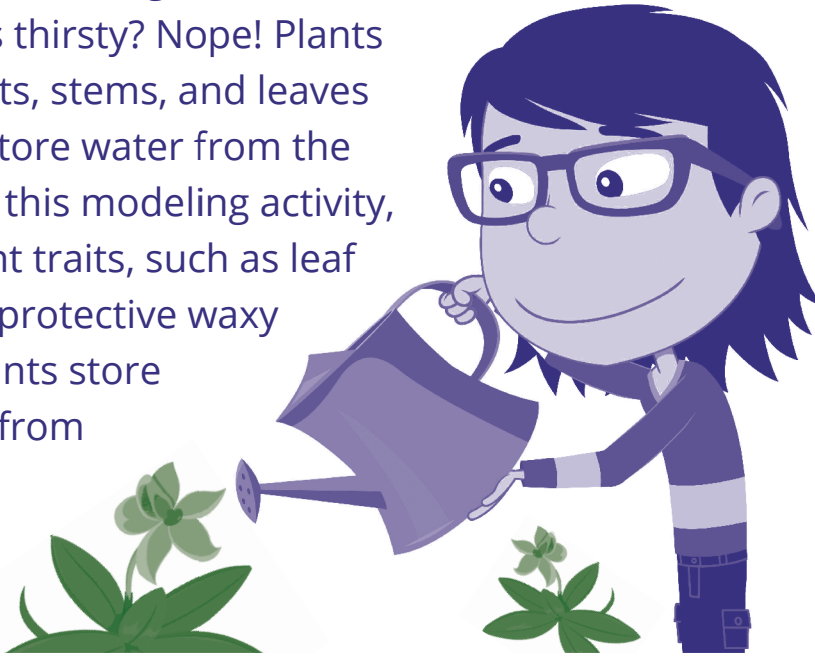


Roots and Shoots



What Is this Activity?

Can a plant pour itself a glass of water whenever it gets thirsty? Nope! Plants rely on their roots, stems, and leaves to take up and store water from the environment. In this modeling activity, see how different traits, such as leaf thickness and a protective waxy coating, help plants store water and keep from drying out.



Exploring your world,
one mission at a time
pbskids.org/plumlanding

Topic
adaptation

Activity Type
indoor

Activity Time
60 minutes

ACTIVITY

Part A

What You'll Need

- 2 or 3 kitchen sponges
- Scissors
- Stapler
- Paper towels
- Waxed paper
- Plastic plates
- Measuring cup

In Search of Plants

- 1 Head outside to look closely at a few plants, such as dandelions, grass, flowers, or vegetables.
- 2 Ask questions like: "I wonder how this plant gets water?" or "What might happen to this plant if it didn't rain for a week?"
- 3 Gently pull up a plant. Talk about how plants take in water from the soil through their roots. Water travels from the roots up the stem and to the plant's leaves.

If you have succulent houseplants, such as aloe, cacti, or jade, compare them to dandelions or garden plants. Many succulents need less water than other kinds of plants. Their thick leaves and stems store water.



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ADDITIONAL FUNDING



Part B

Brainstorm and Build!

- 1 Head back inside. Show your child the materials and ask how you could use them to build model plants that take up and store water.
- 2 Build! Include the three main parts of a plant: roots, stems, and leaves. Help your child cut out leaf or petal shapes from sponges or paper towels.
- 3 Use the waxed paper to model the cuticle, a waxy coating that helps plants prevent water loss. Use staples or string to hold parts together; tape will not hold when you pour water on the model plants.
- 4 Make comparisons. Ask questions like: "Which will hold onto water longer: thick leaves or thin ones?" or "What difference does it make if a plant has a waxy coating?"

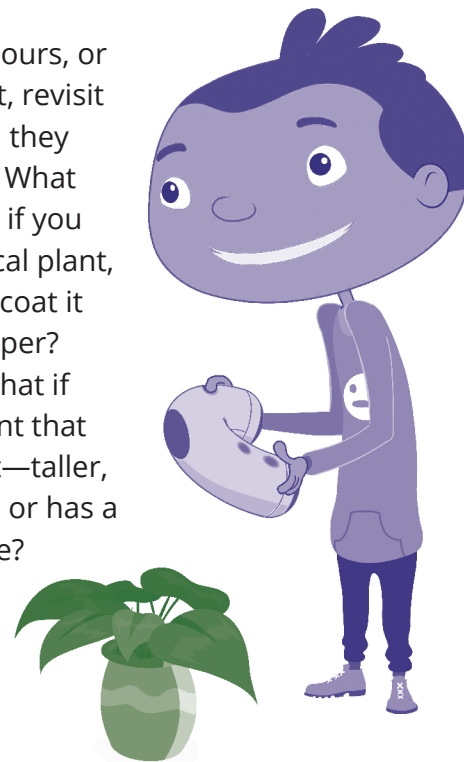
There is no one "right" way to design these plants. Let your child experiment! The point is to compare how different features affect how a plant holds water.



Part C

Make It Rain

- 1 Stand the model plants on a plate.
- 2 Pour about ¼ cup of water on the plate. Watch the water. Where does it go?
- 3 Remove the plants from the wet plate and place them on a countertop where they won't be disturbed.
- 4 After several hours, or even overnight, revisit the plants. Did they change? How? What would happen if you built an identical plant, but you didn't coat it with waxed paper? Give it a try! What if you built a plant that looks different—taller, shorter, fatter, or has a different shape? Give it a try!



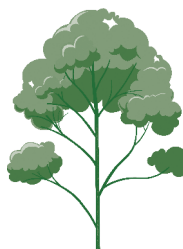
EXPLORE SOME MORE

Plants in the Produce Aisle

Compare the water-holding abilities of different plant parts using produce from the grocery store. What happens if you pluck a basil or lettuce leaf and leave it sitting on the counter overnight? What if you did the same with an aloe or artichoke leaf? Try to figure out which part of a plant—root, stem, leaf, or flower—a piece of produce is. You might be surprised to learn that the nodules on a head of broccoli are actually flower buds!

Roots Everywhere

Talk about how the plants you see every day—grass, trees along the sidewalk, weeds growing along roadsides—get the water they need. Could there even be roots growing under the sidewalks you walk on? You might find tree roots there. A tree's roots often extend as far out as its canopy. Take some chalk and mark out how far the roots of a tree might extend under the sidewalk.



To discover more about this amazing planet we call home, check out **PLUM LANDING** at pbskids.org/plumlanding where you'll find games, videos and, of course, Plum!