



STEM Challenge: Modeling Prickly Pear Cactus Roots Story Book Science at Home Activity

What you need

- Yarn
- One spray bottle filled with water
- One mat, such as a paper towel sheet or cling wrap, for easy clean up
- Optional: one pair of scissors to make additional cuts in yarn

Preparation

Follow instructions below to participate in this STEM Challenge.



Step 1. Gather materials.



Step 2. Organize yarn into pattern where yarn is spread in all directions. This is a model that represents the roots of a prickly pear cactus.



Step 3. Place model of roots of a prickly pear cactus on the mat. Then, use a spray bottle filled with water and spray the roots to represent a desert rainstorm.

What to do

Observe what happens when you spray the model of the roots of the prickly pear cactus. How much water do they absorb? What happens when you increase or decrease the amount of water sprayed from the bottle? Does it influence the amount of water absorbed by the model roots?

What is happening?

Grand Canyon National Park is comprised of many different vegetation communities because of the climate and geology of the park. One vegetation community is the desert scrub, where plants are adapted to the hot, dry desert climate. Many cacti, including the prickly pear cactus (*Opuntia* species), are found in the park's dry vegetation communities. Prickly pear cacti have waxy, oval-shaped stems and shallow, fibrous roots that spread in all directions. These characteristics allow the cactus to conserve water and survive drought conditions.



Image of Prickly Pear Cactus from National Park Service (NPS).

Information from "Plants" and "Cacti / Desert Succulents" from *Grand Canyon National Park* from National Park Service (NPS) and *Field Guide for Managing Prickly Pear in the Southwest* from United States Department of Agriculture (USDA).