

*Tubers* are stems that have been modified for storage. Potatoes are good examples of tubers. *Corms*, such as gladiolus bulbs, are almost completely stem tissue and also store food. *Bulbs* are actually large buds with a small stem at the bottom surrounded by large fleshy leaves. Onions are a great example.

### Root Modifications

In addition to their primary function of anchorage and water absorption, some roots are modified for special functions. Some roots are modified for food storage while others store water. *Pneumatophores* are roots that rise above the water surface and allow trees with their roots under water to “breathe.” Cypress knees are an example of pneumatophores.

Aerial roots perform a number of different functions, including absorbing extra water (*velamane roots*), providing additional support (*prop roots*), and photosynthesis (*photosynthetic roots* of orchids).

## ACTIVITY 4.3

# Water Harvesting: *Construct rainwater collectors and test their effectiveness*

### Before Activity

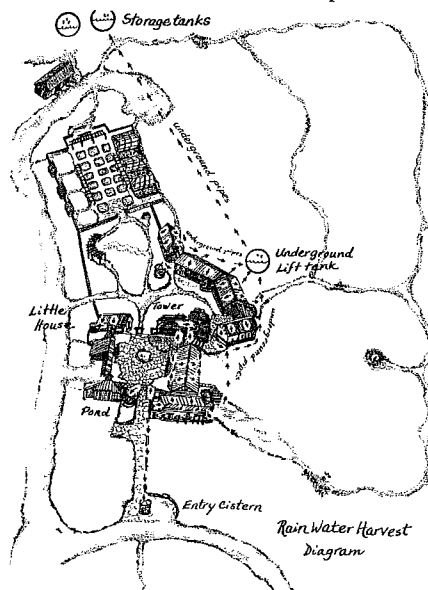
Gather materials:

- 6 aluminum baking pans
- 6 bags of equipment (including foil, transparency, cups, straws, craft sticks, clothes pins, modeling clay, and cistern cup)
- 6 pairs of scissors
- sprinkling water can
- measuring cup and graduated cylinder
- Lady Bird Johnson Wildflower Center Rainwater Harvesting Map, page 60

### During Activity

- 1) Have students gather into their original six teams.
- 2) Review with students what they have learned about how plants have adapted to conserve water. (For example, cactus roots collect and hold

water across a large area for reserves during dry times.) Point out that humans have taken cues from nature to solve their water supply problems. The Lady Bird Johnson Wildflower Center, for instance, gathers falling rain water across large areas of rooftops and holds

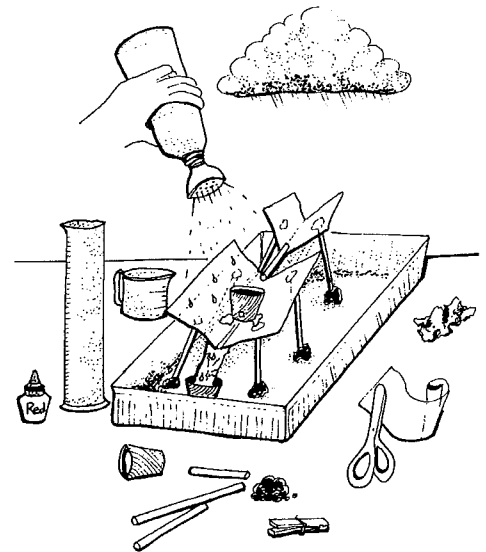


## Teaching Tips for the Wildflower Center

- Have students tidy up their work areas and put the scissors and other materials near the sink. Ask a chaperone to stay in the classroom to disassemble the rainwater collectors and pour out the water.
- Before leaving the classroom, decide which trail students will use for Activity 4.4 (Habitat Mapping)—either the Meadow Trail or the Forest Trail—and pick up the appropriate maps.
- Lead students to the trailhead of the Nature Trail, under the Breezeway. Encourage students to notice the overhead water troughs and roof collectors as they walk around the Wildflower Center during the rest of their visit.

it in cisterns to use for irrigation during dry weather. (Make an overhead of the diagram on page 60 to show students the flow of rainwater collection at the Wildflower Center.)

- 3) Give each team a pan, a pair of scissors, and an equipment bag. Explain that each team will use the materials in the equipment bag to construct a rainwater collector for their baking pan (which represents a piece of land). Their challenge is to direct as much water as possible into the cistern cup (included in the equipment bag).
- 4) Allow 15 minutes for the teams to construct their water collectors. While students are working, measure one cup of water and pour it into the sprinkling can. Before using the sprinkling can in the activity, try it out to get a feel for how the water spreads out
- 5) Select one team's rainwater collector to be tested first. Simulate a rainstorm by sprinkling water evenly over the entire pan from several feet up. Have the



students estimate the amount of water collected in the cistern cup before pouring it into the graduated cylinder to measure.

- 6) Repeat the test for each team. After all the collectors have been tested, ask students to identify the features that made some collectors better than others.