



Note: This FACTivity was adapted from the USDA Natural Resources Conservation Service and Project Learning Tree.



Time Needed

2 class periods (20 minutes of each class period, 24 hours apart)

Materials

(for each student or group of students)

- One small succulent (*sə kyə lənt*) house plant for each student pair (**figures 11a and 11b**)
- One small philodendron house plant for each student pair
- One quart-size “zippable” plastic bag for each plant
- Permanent marker

Leaves take in carbon dioxide and release water vapor and oxygen through small holes on their surface. In dry environments, trees have adapted to conserve the lesser amount

of water available to them. In this research, the scientists were interested in the difference between karst forests growing in the wet North and the dry South of Puerto Rico. One of the primary differences between the forests is the amount of average rainfall.

In this FACTivity, you will answer the question: What is the difference between how much water is transpired by different types of plant leaves during the day? Transpiration happens when the water that entered a tree’s roots travels up the tree’s trunk, through its branches, to its leaves, and out of the leaves through small pores called stomata.

Methods

Preparation

You or your teacher will water all of the plants using an equal amounts of water on the day before beginning the FACTivity.



Figures 11a and 11b. Two easy-to-find succulent house plants are mother-in-law’s tongue and aloe. Photos courtesy of Babs McDonald.

FACTivity Continued

Day One

Your teacher will divide your class into pairs of students and will give each pair two plastic bags that can be tightly closed. Write your name on the plastic bags. Your teacher will give you one of each type of plant.

Note that one of the plants is a succulent. Succulent plants require less water because they hold water in their leaves. Succulent plants are found in dry environments.

Place the plastic bag on a leaf of each plant and seal the bag as tight as possible. The leaf should be inside of the plastic bag. The bag must be applied as early as possible in the day (**figure 12**). Place the plants with the plastic bags in a sunny location.

Allow the plastic bag to stay on the leaf the remainder of the day. Leaves do not transpire at night, however, you may leave the plastic bags on overnight.

Day Two

Being careful not to spill any water that you might find, remove the plastic bags from

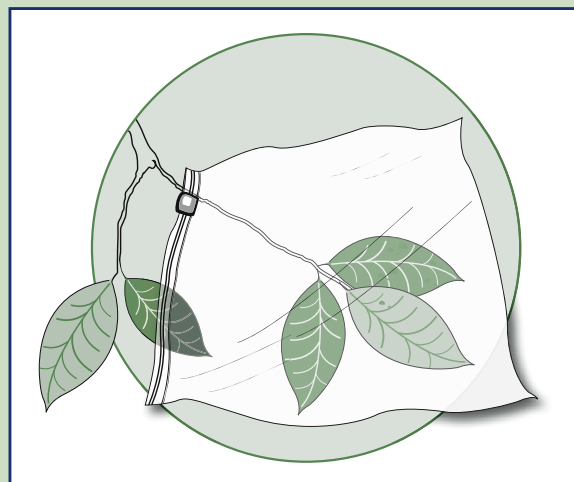


Figure 12. Place the plastic bag on a leaf. Illustration by Stephanie Pfeiffer.

the leaves. Compare the amount of water transpired from the succulent plant with that of the philodendron. Is there a difference? Why do you think you found the results you did?

As a class, discuss how this FACTivity relates to the article you just read. Which type of house plant would be most likely to be found in either the dry karst forest or the wet karst forest?