



Transpiration



Essential Question: What factors affect the amount of water a plant uses?

Overview

Water is one of the basic substances that plants require to live. In fact, most of the weight of a plant is water. In plants, more than 90 percent of the water taken in by the root system evaporates into the air through holes in the surface of leaf. This loss of water through the leaves is called **transpiration**. A mature corn plant transpires about 15 liters of water per week.

As water evaporates from leaves, it is replaced in the plant by water drawn up from the roots through the stem. Tiny pores called stomata, located on the underside of leaves in most plants, open and close in response to environmental conditions, including the humidity of the air, the amount of light available to the plant, carbon dioxide concentrations in the air, and the water content in plant tissue. For example, wind increases transpiration while high humidity reduces transpiration. High temperatures tend to increase transpiration although plants often close their stomata when it is extremely hot and dry. Open stomata are very important for a plant. It is through these pores that carbon dioxide enters the plant to be converted by photosynthesis into food for the plant.

In this activity, you will conduct an experiment to measure the transpiration of different plants.

Materials

For each lab group:

- 4 test tubes
- modeling clay
- 4 plant cuttings
- large graduated cylinder
- water
- fan
- grease pencil