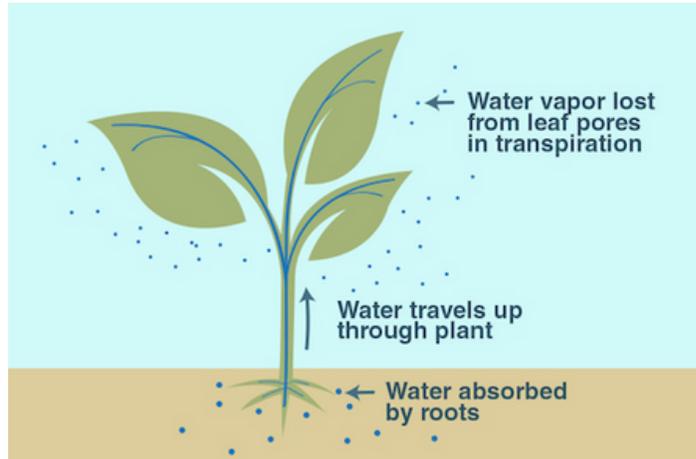


Dyed Flowers

Raccoon Creek Explorers Activity #20

Supplies:

- Fresh cut white flowers
- Food coloring
- Vase
- Water
- Scissors



Vocabulary:

Evaporation: the process by which a liquid turns into a gas

Transpiration: the process of water movement through a plant and its evaporation from aerial parts, such as leaves, stems and flowers

Stomata: Cell structures in the outer layer of plant leaves and needles that are involved in the exchange of carbon dioxide and water between plants and the atmosphere.

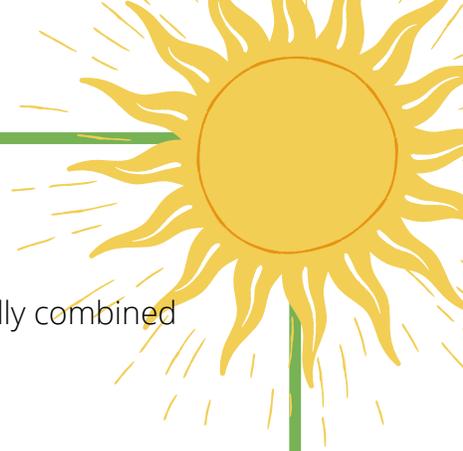
Tension: A pulling force related to the stretching of something

Xylem: A plant tissue that transports water and nutrients from the plant-soil interface to stems and leaves

Background:

Ever wonder how plants stay hydrated? It's through a process called transpiration. Water is absorbed by the plant roots. Roots have xylem that distribute nutrients to the plant, Water and nutrients are transported through the stem and leaves. From there, the water passes to the atmosphere through the stomata of the plant and evaporates. Light from the sun heats the water within the plant to cause the evaporation. Evaporation causes tension which results in the pulling of the water column and ultimately water travels up the plant and comes out the stomata.

In this experiment we will be able to observe how water moves through a plant by adding food coloring to the water. As transpiration occurs in white flowers, the food coloring is pulled up the stem and into the leaves and petals.



Let's Get Started:

- 1.) Fill vase with water about half way
- 2.) Add a 20- 25 drops of food coloring of any color and mix until fully combined
- 3.) snip off bottom 1 in of flower stem at an angle
- 4.) Place flowers in vase
- 5.) Wait and watch the flower change colors over time. Color change should occur within a few hours and will get stronger over multiple days
- 6.) Replace colored water with fresh clear water after a couple days

Reflect:

How long did it take for the flower petals to change color completely?

What happened after the flowers were put back in fresh clear water with no coloring?
Why did this happen?

How long did it take for the flowers to wilt and die?

Apply:

How might temperature influence the rate of transpiration.

How might humidity influence transpiration rate?

Why do cut flowers die after a short time compared to rooted flowers?

Wrap-Up:

Roots have xylem that distribute nutrients to the plant but cut flowers don't have roots. However, they can still take up water but are not getting the nutrients they need because they no longer have xylem. Weather can influence transpiration rate too. Cooler temperatures slow down the rate of transpiration and high humidity reduces water loss and keeps cut flowers lasting longer.

