

Activity-44: Transpiration

Requirements:

1. A potted plant is preferable.
2. An undisturbed spot in your surrounding with sunlight.
3. A clear transparent DRY plastic bag.
4. A thread.
5. Volunteers.

Take the plastic bag and securely seal all the foliage of the plant or a single leaf with a thread. Caution: do not over tighten the thread to cause an injury to the stem.

Leave the setup in the sunlight for the remainder of the day.

Observation: You will observe a lot of water droplets condensed in the inside of the cover

Question: Where did this water come from in the DRY plastic bag?

Answer: The water “transpired” from the leaves.

Repeat this experiment by covering a single flower, a stem with no leaves.

Do you observe the water droplets?

Repeat this experiment with a plant growing in a relatively dry soil? Do you still see water droplets? If so, why is the plant wasting water?

Do you think this is the same amount of water that a plant used in that day? Or is it less? If it is less then where did the remaining water go? If it is more, where did the remaining water come?

What is transpiration?

Tasks:

Children should be provided a straw each with some water or juice in a glass. As them to drink using a straw?

They should be asked how they are able to drink with a straw.

Students who had given blood for diagnostics should be reminded about how blood is drawn into the syringe.

Demonstrate how to suck water using a syringe.

Take a glass of water and try drawing water into the syringe?

Question: can we drink water from a glass without sucking into the straw or can we draw blood from a person without pulling back on the plunger?

Question: how is a leaf at the tip of the plant able to take in (suck) water from the soil when the leaf is 5 feet above the ground? How is the plant creating a sucking mechanism?

Answer: even if you fill a syringe half in water and pull back on the plunger, you will be able to suck water.

Concepts covered:

Water is a liquid. It is also known as a fluid. Fluids are substances that flow. They flow from a region of excess to a region of deficit. Then water is the leaves escape through the small openings called stomata into the air. This results in less water in that part of the leaf. This results in water “rushing” to that from the soil through the vessels.

This is similar to blowing a balloon with air. This is called inflation.

If we release the Balloon, the balloon becomes empty (deflation) but **does not get filled with more air bulging it further.**

