

Light & Air are Important to Plants

Grades: K - 8

Set up: 30 mins ; Follow up lesson: 3 or more days later



Lesson summary:

What happens when you block light from a plant? Cut various shapes in aluminum foil and attach shapes to the leaf of a plant using paper clips. Leave the plant for a week and see what happens!

The second part of this is coating the underside of a few leaves vaseline to starve it of carbon dioxide. This shows students carbon dioxide is also needed for photosynthesis and demonstrates effects similar to starving it of light.

What's the big idea? ? ?

- What happens to a plant if it can't get sunlight?
- What happens if it can't get carbon dioxide?

Outcomes or purpose:

- Students learn that sunlight and air (carbon dioxide) is crucial for a plant to survive
- Students learn what is needed for photosynthesis

Teacher background:

Plants, just like humans, need essential resources to survive. We use the term LAWNS to remember them.

L - Light • A - Air • W- Water • N - Nutrients • S - Soil

In this experiment, we will look at two plant needs: light and air.

Through a process called photosynthesis, plants use the energy from the sun to convert carbon dioxide, soil nutrients, and water into food! The food they produce is a type of sugar called glucose which they can use right away if they're hungry or they can store it in the plant to use later on. Leaves take in air through the roots and leaves, but also release oxygen back into the air through small pores called stomata found on the underside of the leaves. Plants do us a favour because we humans need oxygen to breathe and live.

Plants have special structures in their leaves which contain a green pigment called chlorophyll. Green leaves are a sign that plants are photosynthesizing and making food!

When we block the sun, plants cannot photosynthesize and make the food they need to live. Blocking the pores in the leaves also slows down photosynthesis by starving it of carbon dioxide, which in turn stops it from producing the oxygen that we need.

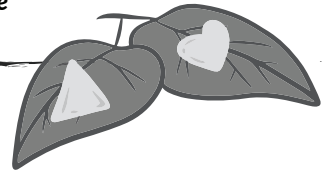
Light & Air are Important to Plants

Materials needed: For the shoebox maze

- 1 Plant, preferably with large leaves (per test)
- Aluminium foil
- Paper clips
- Vaseline
- Ribbon marker
- Scissors
- Phone camera

Step by step instructions:

Before you begin, it's a good idea to take a "before" picture of your plants.



Blocking Light Experiment

1. Ask students why plants need sunlight.
2. Have the students cut out various shapes out of aluminum foil.
3. Attach the foil to the leaves of a plant with paper clips.
4. If your plants have smaller leaves, simply wrap an entire leaf with the foil.
5. Ask the students to predict what will happen to the leaves. Record their answers.
6. Check underneath the foil a week later and discuss your results.

Blocking Carbon Dioxide Experiment

1. Ask students if they think plants need air.
2. Coat the underside of a few plant leaves with vaseline. You can tie a ribbon marker on the leaf so that you remember which leaves were coated.
3. Ask the students to predict what will happen to the leaves. Record their answers.
4. Observe what happens to the leaves every day for a week and discuss your results.



Discussion questions

- What happened when the aluminum foil blocked the sunlight?
- Was there a difference between the plant leaves covered with aluminum foil and those coated in vaseline?

Expand the learning:

- Is there another experiment you could try to test other plant necessities? (Light, Air, Water, Nutrients, Soil)