

HOW IS THE GREEN IN THE LEAVES PRODUCED?

A. Question: *What makes leaves green?*

B. Materials Needed:

- A plant with large wide leaves
- Carbon paper or black construction paper
- Paper clips or masking tape

C: Procedure:

1. Cut out several patterns (circle, square, triangle, etc) in several pieces of the carbon or construction paper.
2. Cover three or more leaves as much as possible with the cut-out paper shapes. Attach them with paperclips or masking tape.
3. Cover some of the leaves halfway with carbon paper, close to the stem. Leave the paper attached to the leaves for 2-3 days.
4. After several days have passed, removed the paper and observe the leaves.

D: Anticipated Results:

The areas that were covered with the paper will appear lighter in color in comparison to the other non-covered leaves. They may even appear almost whitish in color.

E: Thought Questions for Class Discussion:

1. How did the covered areas of the leaves compare to the uncovered ones?
2. Do plants need sunshine to produce the green color?
3. What is the green color in the plant leaves called?
4. What is the process of production of the green color called?
5. What is the function of the chlorophyll in the plant leaves?

F: Explanation:

The covered areas of the leaves will become much paler. The longer it stays covered, the paler the color, because no sunshine is penetrating the green pigment in the leaves. This green pigment is called chlorophyll. All plants contain chlorophyll; and if the plant receives water, sunlight, and carbon dioxide in addition to this pigment, sugar will be produced. This sugar making process is called photosynthesis. The sugar that plants produce is what give us (and animals) energy when we consume them.

The chlorophyll also produces cellulose, which is a much larger molecule than sugar. Cellulose is a basic building material in plants; without it plants cannot grow. Therefore we realize that plants depend on cellulose, which depend on chlorophyll, which depend sunlight. We see that there are many factors needed to keep plants alive and green.