Laboratory – Plants and their Organs Handout

Plants are multicellular organisms. Their organs also work together in organ systems. In this activity, you will determine if the root system that draws water up into a plant is more important than the shoot system, which is responsible for photosynthesis.

Question:
Is one organ system more important for plant survival than the other?

Materials & Equipment
3 white carnation plants in pots (each plant must have at least 5 blooms)
2 balloons
2 elastic bands
blue food colouring
four 400-mL beakers
water

Procedure

1. Place one plant in regular light and give it enough water.

2. Place a second plant in total darkness and give it enough water.

3. Take cuttings from the third plant following these instructions:
    a. Place 1 flower and stem in plain water.
    b. Place 1 flower and stem in water with 10 drops of blue food colouring.
    c. Place 1 flower and stem, with a balloon placed over the end of the stem, in plain water. (Use the elastic band to make sure the balloon does not fall below the level of the liquid in the beaker.)
    d. Place 1 flower and stem, with the other balloon over the end of the stem, in water with 10 drops of blue food colouring. (Use the elastic band to make sure the balloon does not fall below the level of the liquid in the beaker.)

4. Leave the plants for one week.

5. Write a paragraph describing the health of the plants in regular light and total darkness after one week.
6. Write a paragraph describing the health of the cuttings after one week.

Discussion Questions

1. What was the purpose of putting one plant in regular light and one plant in total darkness?

2. What was the purpose of the set-up for the four different cuttings?

3. Which organ system, the root system or the shoot system, is more important for the health of a plant? How do you know?