

Name: _____ Class: _____ Date: _____

Greenhouse Growing Conditions



Learner Outcomes:

- Describe methods used to increase yields, through modifying the environment and by creating artificial environments

Key Terms:

Background Information: Greenhouses help control the temperature for plants, but are designed to allow control of other conditions as well. Light can be increased or decreased. Water and nutrients can be added or adjusted as required to particular plants. The soil can be heated, cooled, and made more or less acidic.

Investigation Question: What effect does a greenhouse environment have on the growth of various crops?

Hypothesis: Write an hypothesis about the effect of a greenhouse environment on the growth of a plant.

Experimental Design:

Manipulated Variable:

Responding Variable:

Controlled Variables:

Materials:

50 mL grad cylinder
Grow lights
Ruler
Thermometer
Sprouted seeds

Clear plastic cups
Potting Soil
Water
Scissors

clear plastic 2L pop
bottles
clear tape
colored pencils
aluminum saucers

Procedure:

1. Use a thumbtack to put drainage holes in the bottom of 2 plastic cups.
2. Fill the cups with potting soil and plant one sprouted seed in each cup. Water each sprouted seed equally and record the amount of water you used. Place the cups on an aluminum saucer to catch any water.
3. Cut the pop bottle in half across the middle. This will become your greenhouse.
4. Place half of the plastic bottle over one of your cups and leave the other open. Place the two saucers under a light source or near a window.
5. Give your plants the same amount of water every 2 days. At the same time each day, measure:
 - a. The soil temperature
 - b. The height of each plant
 - c. The air temperature
 - d. Other observations.

Observations:**Analysis:**

1. Plot your data on a line graph with the day on the x-axis and the plant measurement on the y-axis. Use a different colored pencil for each plant. Be sure to include a legend.

Conclusion: What influence did your greenhouse have on the growth of your plant?

Extension:

Hydroponics is another artificial environment under which crop plants are commonly grown. Investigate one crop that is grown hydroponically and identify the advantages and disadvantages of using this method for mass production of food or crops.