

Name _____

Period _____

Ms. Foglia • AP BIOLOGY

Date _____

LAB 1: SCIENTIFIC METHOD – SEED GERMINATION

Part 1. Brainstorming

Question: What factors influence seed germination

Materials: markers and large newsprint paper

Procedure:

1. Each lab group takes a sheet of paper and set of markers.
2. Brainstorm a list of 10-20 variables that might influence seed germination (sprouting).
3. All members of the group participate by taking turns recording ideas on the paper.
4. Place headings on the chart that include:

Factor (variable)

Predicted effect

Explanation for prediction

5. Post the completed charts on the walls of the room. These are sources of controlled variables.

Part 2. Designing a Controlled Experiment

Your group has been asked to investigate a claim that “Miracle Gro” speeds up seed germination. We will use seeds and germination bags for the experiment. Your group will vary the concentration of “Miracle Gro” as the independent variable, and test its effects on seed germination.

Materials:

- seeds
 - 50mL 5% “Miracle Gro”
 - 5 plastic bags
 - 5 paper towels
 - 5 plastic cups
 - 10mL graduated cylinder
 - 25mL graduated cylinder
1. Obtain a copy of the Experimental Design Guide.
 2. Complete the Experimental Design Guide for an experiment to test whether or not Miracle Gro speeds up seed germination. Use 5 levels of the independent variable and a measurable dependent variable.
 3. Follow your teachers instructions to make a dilution of Miracle Gro.
 4. Instead of planting your seeds in soil, you will plant them in a germination bag. You make a germination bag by placing 1 folded piece of paper towel in the plastic bag.
 5. Add 10mL of solution to the bag.

6. Label each bag with the concentration used.
7. Plant approximately 10 seeds in a horizontal line approximately in the middle of the paper towel.
8. Using masking tape, hang your germination bags on a cabinet door in the room
9. Construct a data table with a title. Your title must include the variables and the organism studied Put the independent variable in the left-hand column.
10. Collect data over several days.
11. Summarize the data in graph form and write a report on the experiment.

EXPERIMENTAL DESIGN GUIDE

Teacher Approval _____

TITLE _____

HYPOTHESIS _____

INDEPENDENT VARIABLE _____

MEASUREMENT OF INDEPENDENT VARIABLE

NUMBER OF TRIALS

DEPENDENT VARIABLE _____

MEASUREMENT OF DEPENDENT VARIABLE _____

CONTROL _____

OTHER CONTROLLED FACTORS (AT LEAST 5) _____

