

Skills and Strategies

- Processing and Analyzing Data
- Evaluating

Safety

- Wash your hands well before and after handling plants and plant chemicals, especially hormone products.
- Take care when using sharp utensils such as scissors. Report any accidental cuts to your teacher.

What You Need

- African violet (for leaf cutting)
- geranium (for stem cutting)
- primrose (for root cutting)
- sharp scissors
- paper towel
- potting soil or compost
- pots
- masking tape
- marker
- large test tube in a rack
- water
- metric ruler

Vegetative Propagation Techniques

Different types of vegetative propagation are used by gardeners, nurseries, and foresters as an easy way to produce plants with desirable characteristics. In this investigation, you will study the use of leaf cutting, stem cutting, and root cutting for propagating new plants.

Question

How can vegetative propagation be used to produce new plants?

PROCEDURE

1. Read the whole investigation before you begin.

Part A (Structured Inquiry):

2. Your teacher will assign you to a group. You will be cultivating two of the following: a leaf cutting, a stem cutting, or a root cutting.
3. Using sharp, clean scissors, take two cuttings from the appropriate parts of the plants. Clean the scissors and dry them well before taking each cutting.
4. Choose from one of the steps below:
 - a) For a root cutting, place one cutting horizontally in a pot of soil. Cover it with a thin layer of potting soil or compost.
 - b) For a stem cutting, place one cutting in a test tube half-filled with water. (The cut end should be in the water.)
 - c) For a leaf cutting, place one cutting in a pot with potting soil.

5. Put all cuttings in a well-lit area of the classroom.
6. Clean and return all equipment. Dispose of any waste as instructed by your teacher.
7. Thoroughly wash your hands.

Part B (Guided Inquiry):

1. Make a plan for how you will quantitatively measure the progress of your cuttings and any differences in growth between the two cuttings. Remember to control as many variables as possible so that any differences between the cuttings result from the difference in method of propagation and not differences in growing conditions.
2. Decide how you will record and organize your results. Keep in mind that you will need to graph your results. Identify the dependent and independent variables that you will graph.
3. Have your teacher approve your plan before you begin monitoring the growth of your cuttings.
4. Observe the progress of your cuttings over the next several days. Record your observations. Water the cuttings as needed.

Process and Analyze

1. Create a line graph to analyze your results. Place the results from both cuttings on the same graph.
2. Between the two cuttings, which showed the best results? Suggest a reason why.

Apply and Communicate

3. Compare your procedure and results with those of other groups. Did other groups have similar results as your group? Why or why not?
4. If you had to propagate plants for a nursery, which method would you use? Explain your reasoning.
5. Assess the data you collected and the methods you used to collect the information. How do you think this investigation could be improved?