

Compost Growth Challenge



Objectives

Students will compare and contrast the growth rate of plants grown in different soils.

Background

Soil or humus produced from composting contains nutrient-rich material that growing plants thrive on. Decomposed green matter (like grass) contains nitrogen, a prime growing element. Bacteria and fungi break down organic matter into easily absorbed nutrients like phosphorous, potassium, and nitrogen. Animals like earthworms also add organic matter when they excrete digested food material. When compost is added to soil, it improves the soil's texture and ability to hold water.

Materials

Per student group:

- two plant pots with bases or bottoms
- two lima bean seeds
- copies of data sheets (3 entries per sheet)
- black marker pen
- measuring cup
- ruler

Per class:

- two large containers
- compost soil
- yard soil
- two hand shovels
- air thermometer
- access to water

Action

1. Divide the class into cooperative learning groups. Distribute plant pots, measuring cup, data sheets, and markers to each group. Set out compost soil labeled "A" and yard soil labeled "B" for students to examine.
2. Tell students they will be growing plants using soil "A" and soil "B". On the data sheets, ask students to hypothesize which soil will provide a better growing medium and why. Students can examine soils for texture, composition, color, etc.
3. Have students label, fill, and water pots. Students should use the measuring cup to record the amount of soil and water. The amounts should be the same for both pots. Students can then plant a lima bean seed in each pot and place both pots together in a sunny or lighted area of the classroom.
4. During the next four weeks, have students make observations on plant growth. Have students record data on data sheet.
5. After four weeks, ask students to compare data. Create a class growth chart with height data from the plant in "A" soil and the plant in "B" soil. Which soil grew a taller plant? Did student hypotheses prove correct? Can students guess which soil is compost? Why would compost soil grow a taller plant? (Compost soil contains more nutrients (decomposed organic matter) than untreated soil from a yard.) What other factors might have hindered or helped plant growth? (temperature, light, water)

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Growth Challenge Data Sheet

Hypothesis: Plant **A** or **B** will grow faster because _____

DAY 1 INITIAL PLANTING

date:

time:

soil used in each pot: _____ cup(s)

water used in each pot: _____ cup(s)

DAY ____ date:

time:

room conditions: temperature

light

water added: no

yes _____ cup(s)

plant condition

Plant A

Plant B

height (in. or cm)

no. of leaves

color

other

DAY ____ date:

time:

room conditions: temperature

light

water added: no

yes _____ cup(s)

plant condition

Plant A

Plant B

height (in. or cm)

no. of leaves

color

other

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Growth Challenge Data Sheet cont.

DAY ___ date:

time:

room conditions: temperature

light

water added: no

yes _____ cup(s)

plant condition

Plant A

Plant B

height (in. or cm)

no. of leaves

color

other

DAY ___ date:

time:

room conditions: temperature

light

water added: no

yes _____ cup(s)

plant condition

Plant A

Plant B

height (in. or cm)

no. of leaves

color

other

DAY ___ date:

time:

room conditions: temperature

light

water added: no

yes _____ cup(s)

plant condition

Plant A

Plant B

height (in. or cm)

no. of leaves

color

other