

## Activity 33

# Plant Growth with Leachate or Tea

**Rationale:** This Activity will be based on various masses of castings. The optimal mass can be determined by growing plants with different masses of castings used as fertilizer.

### Objectives

- 1) Determine the optimal percent ratio of leachate to soil mixture.
- 2) Determine appropriate percent ratios.
- 3) Record the appropriate measurements.

### PDE Standards

#### Science and Technology

- 3.1.7. A,B,C
- 3.2.7. A,B,C,D,E,F
- 3.6.7. A,B
- 3.7.7. A,B,C,D

#### Environment and Ecology

- 4.1.7. A,B,C
- 4.2.7. A,C
- 4.6.7. A,B,C

#### Math

- 2.1.8. A,B,D,G
- 2.2.8. A,B,F
- 2.3.8. A,B,D
- 2.4.8. A,B,D,F
- 2.5.8. A,B,C,D
- 2.6.8. A,B,C,E,F
- 2.7.8. B,C,D
- 2.8.8. F,G,H,I,J
- 2.11.8. A,B

### Materials

Fast Plants® seeds  
Leachate  
2-L bottles (20)  
Created leachate

Distilled water  
50-mL graduated cylinders (10)  
100-mL graduated cylinders (10)

### Introduction

Fast Plants® grow best under the conditions suggested by the Fast Plants® directions. The bottle pots need to be set up with a wick from the bottom bottle containing water into the soil mix. Specific amounts of leachate will be added to enough distilled water to make a liter of solution to be used to water the plants

## Strategies

The amount of coaching for this activity is less than Activity 30, but more than the other inquiry activities. The students' discussions should focus on the method to divide the amount of leachate into each of the 10 bottle pots. The maximum amount should be about 10 times the first amount.

## Procedure

- 1) Set up 10 Fast Plants® bottle pots.
- 2) Obtain several liters of leachate.
- 3) Add one part leachate to 9 parts distilled water to make 0.5 L.
- 4) Pour enough into the soil mixture to arrive at the proper dampness; pour the remainder into the bottom bottle.
- 5) Add two parts leachate to 8 parts distilled water.
- 6) Pour enough into the soil mixture to arrive at the proper dampness; pour the remainder into the bottom bottle.
- 7) Repeat with the following amounts for the remaining 8 bottle-pots.
  - a. Bottle 3 - 3 parts leachate to 7 parts distilled water
  - b. Bottle 4 - 4 parts leachate to 6 parts distilled water
  - c. Bottle 5 - 5 parts leachate to 5 parts distilled water
  - d. Bottle 6 - 6 parts leachate to 4 parts distilled water
  - e. Bottle 7 - 7 parts leachate to 3 parts distilled water
  - f. Bottle 8 - 8 parts leachate to 2 parts distilled water
  - g. Bottle 9 - 9 parts leachate to 1 parts distilled water
  - h. Bottle 10 - 10 parts leachate to 0 parts distilled water
- 8) Record the measurements in the journal and Data Table 1, 2, 3, and 4.
- 9) Complete the Data Tables.
- 10) Draw conclusions from the results.











