

## Activity 32

# Growth of Fast Plants® With Castings

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

### Objectives

- 1) Determine the optimal mass ratio of castings to soil mixture.
- 2) Determine the appropriate ratios of castings to soil mixture.
- 3) Record 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

2.10.8. A,B

2.11.8. A,B

### Materials

Fast Plants®seeds

Castings

2-L bottles (20)

Distilled water

Balance

Spatula

### Introduction

Fast Plants® grow best under the conditions suggested by the Fast Plants® directions; that is, a specific amount of Osmocote tablets for a specific amount of soil mix. The number of tablets is usually six per bottle-pot. However, there are no data to suggest the amount of castings for the same amount of soil. The Osmocote tablets are placed in the middle of the soil mixture; the castings are mixed thoroughly in the top half of the soil mixture.

## Strategies

The amount of coaching for this activity is less than Activity 30, but more than the other inquiry activities. Student discussion should focus on the method to divide the amount of castings in each of the 7 bottle pots. Coaching should help students to decide that the first bottle pot should be below the mass of 6 Osmocotes tablets; the recommended mass for the recommended amount of soil in these pots. The maximum amount should be about 20 times the first amount. Osmocotes tablets are designed to release the fertilizer with changes in temperature over the plant's total life cycle.

## Procedure

- 1) Set up 10 Fast Plants® bottle pots.
- 2) Set up a bottle pot with zero castings.
- 3) Measure out one Osmocote tablet's mass of dried castings.
- 4) Mix the dried castings in the top half of the soil in the first bottle pot.
- 5) Measure out twice the amount of castings used in the first bottle pot.
- 6) Mix the castings in the top half of the soil mixture of the second bottle pot.
- 7) Repeat with the following amounts for the remaining 8 bottle pots.
  - a. Bottle 3 = the mass of 4 tablets
  - b. Bottle 4 = the mass of 8 tablets
  - c. Bottle 5 = the mass of 12 tablets
  - d. Bottle 6 = the mass of 16 tablets
  - e. Bottle 7 = the mass of 20 tablets
- 8) Record the measurements in the journal and Data Table 1, 2, 3, 4
- 9) Complete the Data Tables.
- 10) Draw conclusions from the results.









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