



Herbicide or Fertilizer Migration

How far do fertilizer and/or pesticide migrate through soil? What effect do fertilizer and/or pesticide have on various seeds?

Materials:

12-inch PVC pipes at least 4" in diameter, cut in half, then taped around with duct tape

Different types of soil to fill pipe (sandy, clay, loam)

Weed seeds

Fertilizer

Herbicide such as 2, 4-D (Round-up, Atrazine)

Procedure:

1. Create a question to investigate.

Some possibilities include:

What type of soil allows the farthest migration of the herbicide/fertilizer?

Which nutrients in fertilizer travel the farthest?

What is the effect of different types of herbicide on different types of seed?

2. Prepare the PVC for the soil

Cover one end of the pipe with a petri dish (tape it on)

3. Loosely pack the soil in the PVC pipe-use sand for the top 2-3 inches

4. Determine the amount of herbicide or fertilizer that you want to use.

5. Sprinkle the herbicide or fertilizer on the top of the soil.

6. Simulate rainfall by measuring the equivalent of about 2" of rain on the soil.

Use a calculator to help you: (<http://www.calctool.org/CALC/other/default/rainfall>)

4" diameter pipe

$(2^2 \times \pi) = 12.6$ sq. in. (catchment area); 2 in. of rain = 413 ml of water!

7. Once the water has had a chance to percolate through the soil, open the PVC pipe lengthwise and plant seeds in the soil or test the soil for nutrients.

8. Collect data on the distance the fertilizer or herbicide traveled by noting the growth differences in the seeds or concentration differences in soil tests.