

# Acid Rain and Seed Germination Lab

**Introduction:** What exactly is acid rain and how does it affect our surroundings? In this lab, rain solutions at various pH levels are placed on seeds to show the cumulative effects of acid rain.

**Background:** Pollution from burning fossil fuels included nitrogen and sulfur compounds. They combine with water vapor in the atmosphere to form low pH solutions, like sulfuric acid and nitric acid. When this water falls to the ground it is called acid rain. In more precise terms, acid rain is precipitation with a pH of less than 5.6; a pH of 5.6 is generally considered to be the pH of “normal” rainwater. Acid rain affects any organism living in ecosystems, especially plants. It can damage forest, crops, soil, and buildings. In this investigation, you will perform an experiment to simulate and test the effect of acid rain on the germination of seeds.

**Purpose:** How does acid rain affect the germination of seeds?

**Materials:** 9 seeds, 3 Petri dishes, paper towels, 2 rain solutions, water

**Hypothesis:**

**Procedure:** *note – wash your hands after this lab*

1. Obtain 3 Petri dishes and 9 seeds.
2. Place a paper towel and 3 seeds into each Petri dish.
3. Label each Petri dish with your period, group #, and which solution will be placed inside it.
4. Test the pH of each solution and record it in the data table.
5. Wet the paper towels inside each dish with its corresponding solution.
6. Place the dishes aside and measure growth of the root stem in mm every day in the data table.

**Data: Title:** \_\_\_\_\_

	Rain Solution #1 pH = _____				Rain Solution #2 pH = _____				Rain Solution #3 pH = _____				Observations
	1	2	3	Avg.	1	2	3	Avg.	1	2	3	Avg.	
Day 1 Root Length (mm)													
Day 2 Root Length (mm)													
Day 3 Root Length (mm)													
Day 4 Root Length (mm)													
Day 5 Root Length (mm)													

**Analysis:**

1. Prepare a graph of average root length versus the number of days for each solution. Graph your data.
2. Which solution had the greatest effect on seed germination? How do you know (use data to support)?
3. Which solution had the least effect on seed germination? How do you know (use data to support)?
4. Which rain solution(s) might be classified as acid rain? Why do you think so (use data to support)?
5. What is the relationship between human activities and acid rain?