



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Sukhmandeep K. Sidhu	Project Number 35176
Project Title The Affects of Acid Rain on the Germination Rate of Raphanus sativus (Radish Seeds)	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my science project was to investigate how acid rain affects the growth of plants. I wanted to know about how acid rain kills plants, and how we can prevent it from happening. I know acid rain has killed many plants and animals in our environment, but I wanted to know how badly has our environment been effected by acid rain. So I decided to use radish seeds, or known as Raphanus Stativus, to test my curiosity. My hypothesis stated that the acid rain will affect he germination rate of the radish seeds by slowing their growing rate.</p> <p>Methods/Materials</p> <ol style="list-style-type: none">1.) Mixed one molar of sulfuric acid (H₂SO₄) with 500mL of tap water (H₂O) .2.) Using a pH meter create pH levels 6.0, 5.0, and 4.0 which will the dependent variable because I want to see the different effects of each solution. However, the water with the pH level of 7.0 (H₂O) will be the control variable because that consists of minimal acid.3.) Dispense 15mL of the solution in each of the 6 test pots for each solution that already have 2 cups of soil and 6 toothpicks designating where each seeds is placed. This will be the independent variable because they need to be given the same amount of solution.4.) Dispense the solution three times for every three days.5.) Next, 12 days dispense only 15mL of pure water (H₂O) because there could be different levels of acid rain every time it rains. <p>Results The pH level of 4.0 had killed some of the plants within the first 2 weeks of measuring and left with the average of 2.4 cm growing rate. The level 5.0 had only killed 1 of the plants and average growing rate of these plants was 2.9 cm. The pH level of 6.0 had all of the plants grow and sprout at a 3.3 cm. The level of 7.0 had all of the plants looking green and healthy with a average of 3.7 cm.</p> <p>Conclusions/Discussion After completing my experiment, I learned the importance of reducing how much pollution we let into the environment. The pollution we allow into the air by factories, cars, and any other object that runs on other fossil fuels can determine how much acid rain is created and ruins our food and plants. My hypothesis was correct and my experiment showed how acid rain can easily kill plants.</p>	
Summary Statement This project is an experiment to show how acid rain affects the plants in our environment.	
Help Received The 8th grade science teacher, Mr. Jones, helped make the acid solutions.	