



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Sanjay Siddhanti</b>	<b>Project Number</b> <b>J1725</b>
<b>Project Title</b> <b>Effect of Environmental Conditions on Plant Transpiration</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The goal of my experiment was to assess the effect of environmental factors on the rate of transpiration in a tropical plant</p> <p><b>Methods/Materials</b> I used a potometer to observe the rate of transpiration in the plant. First, I tested the rate of transpiration under normal conditions, which served as the control. I also checked the effect of wind (by using a fan kept close to the plant), heat (by using a 100w lamp), and humidity (by enclosing the plant in a water vapor saturated plastic bag). In addition, I sprayed the plant with carbonated water (pH 5.0) to simulate the effect of environmental acid rain on the transpiration process. Using the potometer, I compared the time required for the plant to lose 0.1 ml of water under different conditions. The independent variable was the environmental conditions and the dependent variable was the rate of transpiration.</p> <p><b>Results</b> I repeated the experiment three times and observed the following: 1)Transpiration was faster under windy conditions and under high temperature. 2)Transpiration was slower under humid conditions and in an acidic environment.</p> <p><b>Conclusions/Discussion</b> After observing the effect of wind, high temperature, humidity, and simulated acid rain on the rate of transpiration in a tropical plant, and having repeated the experiments several times, I found that the data supports my hypotheses. 1. Humidity decreases the rate of transpiration 2. Higher temperatures increase the rate of transpiration 3. Wind increases the rate of transpiration 4. Simulated acid rain (carbonated water, pH 5) decreases the rate of transpiration Since transpiration is vital to the proper functioning of the plant, it is important to understand the effect of environmental conditions such as global warming and acid rain on plant physiology. If I were to repeat this experiment, I would test different types of plants. Also, I would test the effect of additional environmental conditions such as soil water, soil pH etc on transpiration and plant physiology.</p>	
<b>Summary Statement</b> Different environmental conditions such as high temperature (global warming), acid rain (pollution), high winds and humid conditions affect the rate of transpiration in plants.	
<b>Help Received</b> School science teacher loaned glass pipette and tubing to make potometer. Used school microscope to observe stomata on the leaf surface.	