



CALIFORNIA STATE SCIENCE FAIR 2008 PROJECT SUMMARY

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| Name(s) Jason A. Ablott | Project Number J1501 |
| Project Title Acid Rain Accused of Moss Murder | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this environmental science project is to demonstrate that mosses can be used as effective bioindicators. Since mosses act like sponges and draw all nutrients they require from rainwater and the air, the effects of acid rain on the species <i>Grimmia Laevigata</i> will be determined in this science experiment. By evaluating how the mosses react to acid rain it may be determined how polluted the air is near an ecosystem that supports moss growth.</p> <p>Methods/Materials In two separate trials, moss samples were exposed to simulated acid rain solutions ranging from 3pH to 7pH. Samples of <i>Grimmia Laevigata</i> were subjected to daily applications of solutions of varying levels of acidity. Four different samples of <i>Grimmia Laevigata</i> moss were sprayed with acidic solutions, one was sprayed with an acidic solution with a pH of 3.0, one with an acidic solution of 4.0 pH, (which is the level of acid rain), a sample with an acidic solution with a pH of 5.0, and a sample with distilled water, which has a neutral pH of 7.0 (as a control).</p> <p>Results The effects of each acidic solution on each moss sample were monitored to determine whether <i>Grimmia Laevigata</i> could survive highly acidic rain by timing the length of time the samples took to turn a healthy green. After exposure to simulated acid rain for a period of 21 consecutive days the results were compared and examined. These findings demonstrate that after long-term exposure to acidic rain the <i>Grimmia Laevigata</i> samples could not survive. <i>Grimmia Laevigata</i> is sensitive to acid rain and points to its sensitivity to elevated levels of acidity.</p> <p>Conclusions/Discussion This experiment proved that <i>Grimmia Laevigata</i> cannot survive adverse levels of acid rain when exposed to it often. My hypothesis can be accepted If <i>Grimmia Laevigata</i> moss is exposed to an acidic solution containing distilled water and sulfuric acid with a pH level of 5 or less for more than 14 days, then the <i>Grimmia Laevigata</i> moss in the tested sample(s) will enter a dormant state or die. Mosses are an effective, low technology way to monitor the presence of harmful acids in our air and rainwater. When the numbers of mosses in an ecosystem decrease it could be a sign that high levels of acid rain have increased.</p> | |
| Summary Statement This experiment was performed to determine the effects of acid rain on moss. At which concentration does acid rain become toxic to moss? | |
| Help Received Dr, Jim Shevock, Dr. Lloyd Stark and Professor Brent Mishler identified the species of moss I used in this experiment. My mom helped with the photographs. | |