



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Michael L. Janner</b>	<b>Project Number</b> <b>J1115</b>
<b>Project Title</b> <b>What Are the Effects of Water, Aeration, and Nitrogen on the Decomposition Rate of Organic Matter?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The goal of my project was to determine the effects of three variables; water, aeration, and nitrogen; on the decomposition rate of standard compost. I believed that the compost with all three variables would decompose the fastest.</p> <p><b>Methods/Materials</b> I filled 24 empty water bottles 14 cm high with organic material. Each bottle received a combination of the three variables being tested, water, aeration, and nitrogen, except for the control group, which received none of the variables. There were eight different possibilities for each water bottle. I had three of each possibility, making twenty-four water bottles. The bottles that received water were given 5 mL of water a week. The bottles that received aeration had twenty holes on the bottle, each measuring 3 mm in diameter. I also shook these bottles ten times every week, which was a substitute for turning the compost inside of them. The twelve bottles of compost that received nitrogen were given 1 tsp of nitrogen weekly. I continued this experiment for four weeks. At the end of each week, I measured the height of the remaining compost in each bottle to determine which variables caused organic matter to decompose the fastest.</p> <p><b>Results</b> My tests showed that Group 7, which received water, aeration, and nitrogen, decomposed the fastest by the end of the experiment, with only an average of 8.4 cm of compost left in each bottle. The group that decomposed the slowest was Group 8, which was not given any of the three variables.</p> <p><b>Conclusions/Discussion</b> My hypothesis was proven correct because Group 7 decomposed the fastest. This was expected because these water bottles were given much more aid to decompose than the others. What did surprise me was that the bottles with nitrogen and air, but not water, decomposed much faster than the bottles with water during the first three weeks, but when they dried out on the last week, they decomposed very slowly. This was also when the bottles that were given water decomposed the most.</p>	
<b>Summary Statement</b> To find what speeds up the decomposition rate of organic matter most effectively, I tested twenty four samples of compost with different combinations of three well-known factors: water, aeration, and nitrogen.	
<b>Help Received</b>	