



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Compact Contained Device for the Increased Efficiency of the Compost Mulching Process	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In Bakersfield there exists a serious lack of environmental concern. With this project, we hope to diminish the amount of strenuous work involved with the composting process by allowing people to recycle their used food scraps into composting material in just one week instead of the usual length of several months. By making this process shorter and easier, we hope to encourage more people to recycle their used food scraps into organic fuel, instead of adding it to the already overgrown landfills found in the United States.</p> <p>Methods/Materials Materials: 2 five-gallon buckets; 12 pounds of assorted fruits and vegetables (including apples, bananas, carrots, and tomatoes); 40-watt light bulb; power drill; electric food beater attachment; fertilizer containing ammonium phosphate and ammonium sulfate; 12 oz. of water; pH meter; thermometer.</p> <p>Methods: Food was chopped coarsely into medium sized chunks and then divided equally into two 5-gallon buckets. One bucket (the experimental sample) was labeled "E" and the other bucket (the control sample) was labeled "C." The light bulb was attached to the bucket through the lid and the fertilizer was added to the food mixture. The temperatures of each were taken. The contents of the experimental bucket were mixed using the electric beater attachment. The pH and weights of each bucket were taken and recorded. Steps 4-7 were repeated once a day for one week.</p> <p>Results The final pH of the control sample was 4.35 while the final pH of the experimental sample was 3.9. The difference in the final pH values show that more food waste has been decomposed in the experimental sample.</p> <p>Conclusions/Discussion Our data show that we have accomplished our goal. This can be shown by the difference in pH between the control sample and the experimental sample. Since the control sample ended up with a higher pH than the experimental sample, we can assume that more humic substances were produced in the experimental sample. Humic acid is known to have a pH slightly higher than 2, but this pure substance only achieves such a low pH after other humic substances created in composting are extracted. Therefore, these other products contribute to a higher pH level, closer to the levels our experimental sample achieved. Thus, the experimental procedure successfully catalyzed the decomposition process and produced substances that can be used as recyclable nutrients for plants.</p>	
Summary Statement We diminished the amount of strenuous work involved with the composting process by allowing people to recycle their used food scraps into composting material in just one week.	
Help Received	