CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
34032

Project Title
What Ingredients in Anaerobic Digestion Produce More Methane?

Abstract

Objectives/Goals
My objective was to determine what ingredients (oranges, carrots, or sweet potatoes) produced the most methane when put through the process of anaerobic digestion.

Methods/Materials
To do this project, I built three, identical anaerobic digesters, and put four pounds of oranges, sweet potatoes, and carrots separately into the anaerobic digesters, using 5-gallon buckets, tubes, caulking, etc. and let them sit for two weeks. I then measured the amount of methane that had built up inside of a balloon, recorded the data, and then repeated the process over again. In all, I did the experiment three times, recorded the data, and analyzed the results.

Results
The results showed that oranges produced the most methane.

Conclusions/Discussion
My results did and did not support my hypothesis. I thought that sweet potatoes would produce the most, carrots the least, and oranges in the middle. I was wrong where oranges produced more than sweet potatoes, but right in the fact that carrots produced the least.

Summary Statement
My project is about experimenting with different ingredients to determine which could be used as clean, renewable energy producers.

Help Received
Father helped with the construction of anaerobic digesters; mother gathered produce and helped with presentation board layout; brother helped get the lids off my anaerobic digesters; teacher, Mr. Scott, helped me along the way; and grandma provided a kitchen scale.