CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
31098

Project Title
Poop Power: What Types of Biomass Produce the Most Gas?

Abstract

Objectives/Goals
My objective is to determine which biomass produces the most gas (manure and apple, manure and banana, or manure). My hypothesis states that I believe that manure plus apple will produce the most gas.

Methods/Materials
I conducted two experiments using 9 identical 2 liter soda bottles, electrical tape, and balloons to create biogas generators. I had a total of 18 bottles acting as generators. In each experiment, three bottles were filled with cow manure and apple plus distilled water, three bottles were filled with cow manure and banana plus distilled water, and three were filled with just manure plus distilled water. I placed the bottles at room temperature for 18 days. I measured the circumference of the each balloon in millimeters (mm) every day.

Results
The biomass of manure and apple produced the most gas, producing on average 113.33 mm. The bottles with banana and manure produced some gas, on average 73.33 mm. The bottles with plain manure (control) produced 36.67 mm.

Conclusions/Discussion
My conclusion is that the production of biomass energy is possible by using manure and biomass. This energy can be transformed into a useful energy source. Using the fermentation process to turn the manure and biomass, such as apple, into methane causes the generator to produce gas.

Summary Statement
My project explores the production of biomass gas using cow manure, apples, and bananas; which is a great alternative renewable energy source for the future.

Help Received
My parents supervised the set up, handling, and clean up of materials.