CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
Kian R. Ghasemi

Project Number
J1111

Project Title
Biogas Generation as an Alternative Energy Source and Study of Production Rates from Decomposed Waste Food Sources

Abstract

Objectives/Goals
To determine the highest amount of biogas generated from three waste food sources (mashed banana, chicken skin, potato peels) upon decomposition.

Methods/Materials
Fresh cow manure, 3 different types of waste food items, distilled water, latex balloons, soda bottles, and shipping tape.

Results
Over a period of 12 days, the mashed banana generated the most amount of biogas. On average, mashed banana generated 3.67 cm (31%) more biogas than the potato peels and 2.83 cm (22%) more than the chicken skin. The chicken skin generated the second most amount of biogas. On average, it generated 0.84 cm (7%) more than the potato peels. Finally, the potato peels generated the least amount of biogas.

Conclusions/Discussion
The mashed banana generated the most amount of biogas, then the chicken skin, and finally the potato peels. These results therefore refute the initial hypothesis and prove it incorrect. The conclusion of the experiment is that there are several different factors that affect the amount of biogas generated from a specific waste food source. By using this knowledge, biogas generation can be optimized to the full extent as an alternative energy source.

Summary Statement
I studied the decomposition of different waste food sources, and discovered that mashed banana had the highest biogas production rate.

Help Received
None. I performed this experiment independently.