CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY

Name(s)

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Project Number

J1120

Project Title

Biodegradable Take-Out Sauce Containers

Abstract

Objectives

The objective of my invention was to design a ratio of ingredients that are used in making biodegradable plastic and use this ratio to make biodegradable plastic that can biodegrade in a period of 1-2 months in garden soil and is resistant to water and weights placed inside it.

Methods

To conduct my invention, I used three different ratios of gelatin, glycerin, and hot water with varying amounts of glycerin in each and three different methods to dry the biodegradable plastic to see what ratios and methods produced one such plastic that was most resistant to water, able to hold weight, and was biodegradable.

Results

Three ratios of glycerin used in biodegradable plastic and three different methods of drying that plastic were used to make biodegradable plastic tested for biodegradability, water resistance, and the ability to hold weights placed inside. The results proved the ratio of biodegradable plastic made with the most amount of glycerin was able to pass the three tests and fare much better than plastic made from the other two ratios, and plastic dried using a blow dryer was able to pass the three tests and do much better than plastic dried using the other two methods.

Conclusions

The conclusions of my invention were that biodegradable plastic made with a higher amount of glycerin and dried using a blow dryer led to a better ability to biodegrade and a higher resistance to water and weights placed inside it and my engineering goal was achieved. For further research, I would like to use the principles and methods used in my invention and apply these principles to disposable sauce packets.

Summary Statement

As shown by the results, gelatin - based biodegradable plastic made using a greater amount of glycerin and dried using a blow dryer was able to better biodegrade, resist water, and better hold weights placed inside.

Help Received

My science teacher, Mrs. Bonny Basu, helped me with overcoming one challenge of my experiment, the fact I could not maintain a compost pile and still keep the bioplastic inside, by suggesting that I use a layer of garden soil instead.