CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36765

Project Title

Mealworm Madness: Are Mealworms Able to Ingest and Digest Polystyrenes Safely?

Abstract

Objectives/Goals

The objective is to determine if mealworms are able to digest and ingest polystyrenes safley and without adverse health effects.

Methods/Materials

Eight colonies, each containing 780 mealworms, were set up in December. These colonies were fed at the same time and the same type of food and kept in the same environment. The manipulated variable was the type of substrate. Two colonies with an all-bran substrate were the control group. There were two colonies with half bran and half Styrofoam, two colonies with bran and Styrofoam chunks, and two colonies with just Styrofoam. Over 47 days observations of health and activity took place regularly and colony growth was calculated.

Results

All colonies were healthy. The four colonies with a bran and Styrofoam mix had more beetles than the control group. Two of those colonies had Styrofoam chunks and the highest level of beetles. These colonies were generally more active than any of the other colonies. The all Styrofoam colonies had the highest level of mealworms and least amount of dead mealworms.

Conclusions/Discussion

My hypothesis was incorrect. My results showed that all of the colonies were healthy and able to digest and ingest polystyrenes. The gut bacteria of the mealworms are able to break the polystyrenes, and this could have global impacts for dealing with the plastics problem. I#ll continue my project by taking the by-products of the colonies and using it as a fertilizer for plants. I#ll look to see if this results in different amounts of growth for the plants.

Summary Statement

I tested and to see if mealworms couid digest and ingest polystyrenes safley, I found out that mealworms eating polystyrenes had no negitive efficts on them, however, a 100% polystyrene diet slows down the mealworms life cycle.

Help Received

I farmed designed, presented, and composed my board on my own. I also raised my mealworms on my own. Myr and Charles Slosberg purchased my supplies. I got suggestions on how to inprove my project by WeMinWu, Charles Criddle, Nicha Huxtable Potter, Matt Inman, and Schatzi Sovitch.

Preliminary