CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J1107

Project Title
Worm World: Vermiculture Using Lumbricus terrestris and Eisenia foetida and the Effect They Have on Soil Composition

Abstract

Objectives/Goals
The objective of this study is to discover how the diet of Lumbricus terrestris and Eisenia foetida affects their growth, reproduction, and the quality of the soil they process.

Methods/Materials
160 Lumbricus terrestris, 160 Eisenia foetida, eight buckets of soil, soil test kit, shredded wheat and oat cereal, leaves and grass clippings, broccoli and carrots, shredded newspaper. Weighed and divided the worms up into eight buckets with 40 worms of the same species to each bucket and then fed four separate diets to both types of worms for a total of eight weeks. Tested the soil, weighed and counted the worms after eight weeks to determine the best diet to help enrich the soil.

Results
The soil test showed increased nitrogen levels in all 8 samples. Eisenia foetida in carrots and broccoli diet increased the most in weight. Eisenia foetida in cereal diet increased the most in numbers. The soil in the cereal diet increased or maintained the nutrient levels.

Conclusions/Discussion
For soil nutrients, the cereal diet was determined to be the best food source in both test species as it maintained both the phosphorus and ph level while increasing the nitrogen and potash. This might be caused by the cereal having added vitamins and minerals which were broken down by the worms and put into the soil. The worms had the biggest weight gains with the broccoli and carrots as a food source. This might be caused because it was easy for the worms to eat since it is a vegetable and more natural.

Summary Statement
I found that worms can enrich the soil which makes vermicomposting practical for organic farming and less developed agricultural regions.

Help Received
I researched and conducted the experiment myself. My Dad helped me interpret the data for the graphs and my Mom helped construct the backboard.