Experimental Inquiry Project

You will be working with a partner to conduct an experiment over the next several weeks. You will hand in a lab write up written in paragraphs and including any charts necessary to answers the questions below. Your topic will include experimenting on how altering an abiotic factor (not alive) can influence a biotic (alive) factor. This topic must also relate to an environmental issue. For example –

How much organic waste can worms eat?
Can plants stop erosion?
How does acid rain affect fish?

You may create your own project our use one already created. This site has great ideas:
http://www.sciencebuddies.org/science-fair-projects/Intro-Environmental-Science.shtml

1. *How much organic waste can worms eat for a week?*

2. they will eat about 0g or 200g to 400g.

3. the first multiple answer is 0g because I do not think worms can eat food ,like:rice,noodle or some human food.

the second answer is 200g to 400g because I think if there is no soil here, worms will be hungry ,they will eat the food maybe.

1. I prepare a box ,and I will put about 9g banana on the box after bout\weeks,I will pick up the piece of the banana ,then I will use the electronic scales to test how weight the pieces of banana is, We use the x to equal the banana weight after a week,so "9g-x=y" the y is the answer ,how much organic waste can worms eat for a week.after we finish the lab.

    I don't think my project have any risk,because our only use some food leftovers and some worms and a box. If the worms climb out ,the people on my house will crazy that is a risk.

    After we finish that project, I will put worms in my house garden .this only involved environmental issues.

    using the electronic scales (and using hands to write down)

the worms climb out.

Organic waste—like table scraps, agricultural waste, and human and animal waste—is biodegradable .
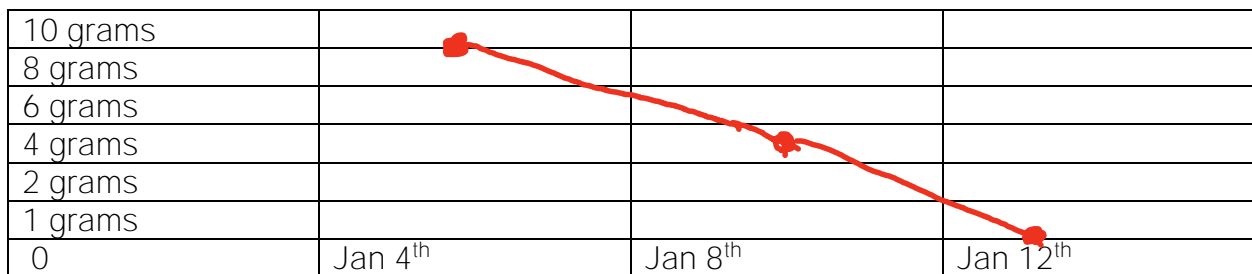In general, earthworm activity temperature in the range of 5 ~ 30 ℃, 0 ~ 5 ℃ into the

dormant state, 0 ℃ below death,

"9g-x=y" the y is the answer ,how much organic waste can worms eat for a week

the variables is the days and how many gram the banana disappear.

	Jan 4th	Jan 8th	Jan 12th
banana	9g	4.8g	og
worms	80	80	80
soil	same	same	same
temperature	2	2	2

How Much Of A Banana Can 80 Worms Eat In 8 Days

Scale for graph 1: Every 10g.

10 grams			
8 grams			
6 grams			
4 grams			
2 grams			
1 grams			
0	Jan 4th	Jan 8th	Jan 12th

How Many Worms Were In The Box

Scale for graph 2: Every 10 grams

80 worms			
70 worms			
60 worms			
50 worms			
40 worms			
30 worms			
20 worms			
10 worms			
0	Jan 4th	Jan 8th	Jan 12th
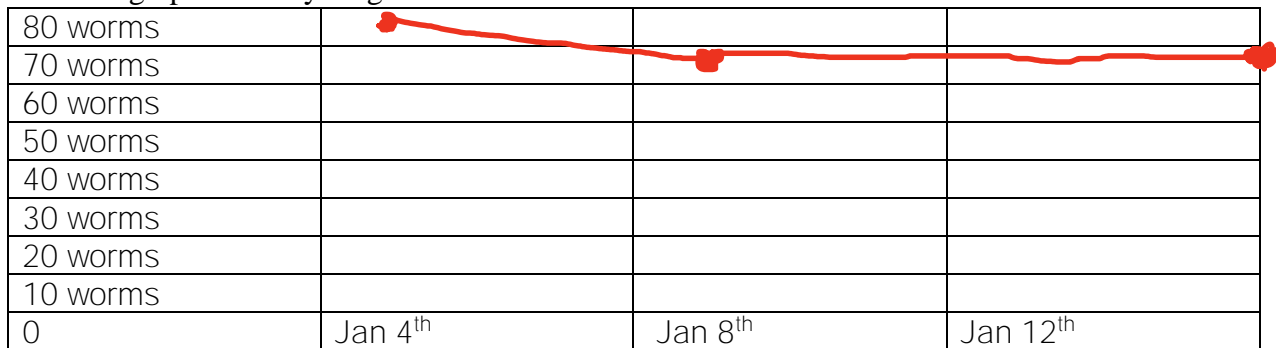
Data Analysis

The aboriginal principle that we used the most during the process of our project is how learning is supposed to be connected to information learned prior and how it's connected to our universe. The idea of seeing how much of a banana could red wiggler worms could eat in 12 days is connected to the idea of the food chain.

The food chain is made of four tertiary levels: producers, primary consumers, secondary consumers and tertiary consumers/top carnivores. We also know that decomposers, such as worms can exist on any level of the food chain. Eating away the animals who die without being someone's *lunch*. The 9 gram banana we used is a producer, a organism that uses the sun to gain energy.

The energy is eventually taken by the worm when it eats the banana. It turns the banana into nutrients by making it into worm casting (otherwise, worm poop) and poops it into the dirt.

Giving the soil more nutrients for the plants. Other than using science, we also used math and computer programs (Microsoft Word etc.)

In the *production stage* of our project, I learned from an online source that a 1000 worms can eat 1 pound of food. I used a mathematical formula to estimate how much can multiple (any number)worms eat in a day: amount of worms/1000x 0.5= amount they could eat in a day in pounds (it can be converted to grams.) We also had another formula for how much the worms ate: 9g-x=y. X being what is left of banana and Y for how much of a banana can the 80 worms eat in a week.

The temperature range for the worms to be doing there job is 5-30°C, anything lower than 5 would make them dominant and anything below 0°C would mean death. There was no change of temperature inside the box that we used, it stayed at 2°C. That means the worms will eat a lot more slowly.

My partner, Jessy, took care of the worms over the period of 12 days. Checking on the banana every four days and by 12 days, the banana was gone.The amount of banana eaten between the 4th and 8th day is 4.2g.

There were a few inconsistencies during the project: first,Jessy didn't put in any soil during the first day we started doing the project. On the second day, 3 worms climbed out of the box and died. Then she also put in a second banana after the last one disappeared. There was also some white-webbing like thing over the banana that I thought was fungi.

To summarize this; 77 worms can eat a 9g banana in 8 days.

Science Project Conclusion

Yes, the 9g banana was eaten whole after 8 days by 80 worms or the banana was entirely eaten by the worms.

Temperature was kept at 2°C, proving that low temperatures will still keep the worms eating at the banana. The farm was indoors with the temperature at 2°C (below 5°C), meaning that the worms didn't eat at as fast. Jessy didn't put any soil in during the first day of the project. Then on the second day, three worms climbed out and died. She also added a second banana after the first one disappeared.

There was uncertainty on both sides of the partnership: I didn't record what the banana looked like over there because I didn't have a photo to see what it looked like sometimes. There was uncertainty on Jessy's side due to some worms may have been ill or weak, so they won't be able to eat. There were few small errors like Jessy putting in the soil on the second day of doing the project and she adding the second banana.

There was also error on my side too: if I helped out with building the worm farm, I would have been able to add the soil. If I also exchanged the worm farm with Jessy and asked for the photos earlier, I would have gotten a lot more data and kept the variables constant.Other then that, there were no confounding variables but I did think the amount of worms also could had been a factor in the experiment. I learned that a pound of worms (about 1000) can eat 0.5 pounds of waste (226.796g). If we have 80 worms, they would eat 0.04 pounds a day but again, that and how fast may depend on the weather. Jessy also suggested that we should had two boxes: one with a 100g banana and worms in soil along with a box with just the banana. I noticed that this was similar to our original idea for this investigation. We should have also had a clear hypothesis when we started this project.

One thing I wonder about this project is how much time would worms need to eat food/organic material that can be used in compost bins (kitchen waste, coffee grounds etc.)