Activity #35

Coir Vs Shredded Newsprint

Rationale: In the food industry, coir (coconut husks) is a by-product of coconut farming and can present disposal challenges. If coconut husks can be ground up into small bits, can they be used instead of shredded newsprint? Additionally, will the coir provide extra nutrients not available in newsprint alone?

Objectives:

1) To design an experimental design for new variables.
2) To design the set – up.
3) To analyze the data collected

PDE Standards:

Science and Technology

3.1.7.A,B,C
3.2.7.A,B,C,D,E,F
3.6.7.A,B
3.7.7.A,B,C,D

Environment and Ecology

4.1.7.A,B,C
4.2.7.A,C
4.6.7.A,B,C

Math

2.1.8.A,B,D,G
2.2.8.A,B,F
2.3.8.A,B,D
2.4.8.A.B.D,F
2.5.8.A,B,C,D
2.6.8.A,B,C,E,F
2.7.8.B,CD
2.8.8.F.G.H.I.J
2.11.8.A,B

Materials:

2 - Liter bottles (2 per group)
Coir
Distilled water
Newsprint

Introduction:

Both newsprint and coconut husks are by products and must be disposed of to maintain an orderly environment. Certainly, vermiculture does not recycle a significant amount of newsprint, but non-the-less some is recycled. If coir can be recycled as well as newsprint, which is recycled at present, that would be a good investment.

Strategies:

This should be as much of an inquiry based experiment as can be accomplished. The experimental design should be very similar to many previous activities. Refrain from over coaching in this Activity. Students may need to review/search what coir is and how it is manufactured. These last few Activities are supposed to challenge the students' abilities to design rigorous and well conceived experiments. Use as little coaching as possible without sacrificing good scholarship.

Procedure:

1) Set up (2) 2- liter or larger habitats per group.
2) Place shredded newsprint in one mini habitat.
3) Add water equal to 3 times the mass of the dry newsprint.
4) Dry the coir thoroughly, crush or grind up.
5) Add water equal to 3 times the mass of the coir.
6) Add 10 juvenile worms to each mini Habitat.
7) Place in dark safe environment.
8) Feed immediately and monitor.
9) Record observations in your Journal.
10) Remove worms on a regular basis, weigh and measure length.
11) Record measurements in your Journal and in Data Table 1 or 2
12) Note the first appearance of cocoons, count and record numbers.
13) Note the first appearance of hatchlings, count and record numbers.
14) Complete Data Table 1 and 2
15) Draw conclusions from results

Expectations:

The students should be able to:

1) complete a well conceived and designed experiment.
2) a well conceived Data Table.
3) analyze the collected data.

Data Table 1 *(Typical Student Data Table)* **Newsprint**

Date	Cocoons		Hatchlings		Increase Cocoons		Increase In Hatchlings	
	#	Mass	#	Mass	#	Mass	#	Mass
Totals					**XXXX**		**XXXX**	
Average Per worm					**XXXX**		**XXXX**	

Data Table 2 *(Typical Student Data Table)* **Coir**

Date	Cocoons		Hatchlings		Increase Cocoons		Increase In Hatchlings	
	#	Mass	#	Mass	#	Mass	#	Mass
Totals					**XXXX**		**XXXX**	
Average Per worm					**XXXX**		**XXXX**	