# Wormy Experiment Ideas for the Classroom

## *Castings or No Castings, THAT is the question…*

**MATERIALS**:

- 2 plants,
- 2 pots,
- Dirt from the garden outside,
- Worm castings,
- Mixing basin to mix dirt and castings,
- Optional buckets to hold dirt and castings,
- Journal to record observations.

**PROCESS:**

- Purchase identical plants from a garden store, or similar idea
- Collect dirt from an outside area in a large bucket
- Collect worm castings
- In Pot A, use only the dirt from the outside area
- In Pot B, mix dirt with castings 50:50 ratio
- Water well so soil is soaked through. Place plants next to each other in optimum location with correct amount of sun.
- Water plants equally and maintain moisture.

**OBSERVE, QUESTION, DISCUSS, RECORD:**

- Take time to watch and wonder about the plant, the soil, the water, the worms.
- What does the soil look like, feel like, smell like in each pot?
- Measure plants each week and observe growth. Write measurements and observations down.

Observe and record what you see, including but not limited to:

- Color of leaves
- How robust does each plant look?
- Do they look different?
- Does one pot dry out more quickly? Does one pot tend to hold water better?
- Are there pests bothering either plant?
- What sense do you have from each plant? If a plant could talk, what do you think each would say?

## *Watch and Wonder*

**Take off the top of the bin and what do you see? Can you see …**

- Trails of castings?
- Worms of different sizes? Baby worms look like threads and they grow very quickly. Can you see the many generations of worms in this one place?
- Are some worms mating?
- Can you identify anatomical parts?
- Are they squirming when the light hits them?

- Do you see any cocoons (the egg casing that holds 5-20 fertilized eggs)
- Do you see a worm shedding it's cocoon?
- Do they look comfortable when the light shines on them?
- Discuss how worms burrow and loosen dirt naturally - they are called Nature's Plows - and how worms burrowing can help loosen soil and help crops grow.
- Gently dig out a deeper part of your worm bin place a few scoops onto some cardboard or a surface you can easily put worms back into bin. Identify up close how many worms you see, count them, notice the different sizes/ages, can you find cocoons, can you identify their body parts like the clitellum and the setae, if you look closely, can you see them eating?

## *Get Serious… And Measure!*

The Marlborough District of New Zealand put together a great resource on worm composting. In it is described an experiment that can be done over time to identify how many pounds (or kilograms) of food scraps worms can process into castings.

1. Weigh and record the amount of food scraps placed into the worm bin.
2. Observe how quickly scraps are converted to castings. Keeping in mind that worms can double their population size in 1-3 months, and that they can consume their body weight in scraps daily, record on a weekly basis how much food is going into the bin, how well it seems to be processed, and notice if over time, as the worms presumably multiply, the process goes faster, or scraps are processed at a swifter rate.

3. You can also identify how much cardboard or newspaper is added to the bin. How many pounds of food waste, cardboard, and paper is recycled and transformed for garden use?

4. Take a moment to recognize the pounds of plant matter that did not go to the landfill. Landfills lack the essential elements for plant matter to decompose naturally, so in a landfill organic matter rots and emits methane and carbon dioxide gasses at a much greater rate than natural decomposition. Discuss how changes in how we process our trash can have a major positive impact on our environment, atmosphere, and future.
5. Cast the castings into the school garden and watch the fruits and flowers grow!

## *FUNDRAISING!*

I don't know of a school that doesn't have to raise money. Here are some ideas to get families involved with supporting natural science and environmental awareness in education! This can be a regular thing, or a great project for the kids to put together and sell once a year at the school parent fundraising gala event.

- Sell Bags of Worms - Once your worm bin is seriously established, bag up some worms and sell them - what's the going rate for a 10 pound bag of worms in your area?  It's about $25 in San Diego…
- Bottle up the worm juice, diluted with water 10:1, and sell the spray bottles and instructions with some artwork on the instructions
- Build worm bins and sell them with a bag of worms at the school - include a brick of coconut coir, printed instructions on how to set up and maintain the bin, and a copy of Martin Snell and his Worm Hotel. (see Resources at www.susanfrazee.com for a D-I-Y worm bin idea that we sold for $100 at our gala event)