Worms

Overview

In this lesson students will learn about soil and how worms are good for the soil.

Background

- Who can tell me the difference between soil and dirt?
    - Dirt is soil where it is not supposed to be
    - Example- on your shoe-dirt
    - Example- Under your fingernails-dirt
    - Example- in your yard-soil
    - Example- in your house-dirt
    - Example- in the field or garden-soil
- Does anyone know what soil is made of?
    - Air
    - Water
    - Nutrients- minerals,
    - Organic matter- decomposed/decomposing matter
    - Microbes- bacteria, fungi
    - Living things-animals, plants
- Why do we need soil? What does it do?
    - Used for building materials- roads, dams, buildings, foundations, etc.
    - Soil provides a place for plants to grow- food for humans/animals
    - Provides food for many living things
    - Helps absorb, filter and hold water
    - Creates a home for living things
- So, we know that soil is a home for many things, what kind of things live in the soil?
    - Groundhogs
    - Chipmunks
    - Plants- trees, flowers, corn etc.
    - Mice
    - Moles
    - Bugs- insects, nematodes
    - **WORMS**
- Why are worms important?
    - They are food for other animals- birds, moles, fish, etc.
    - They help decompose organic matter in the soil- leaves, grass, other dead things
        - When they do this, they leave behind castings which is like fertilizer- the plants can use this as food
    - Worms, also help to “turn” the soil
        - Have you ever seen a tractor or maybe an adult in the garden that breaks up the ground and tills the soil? This is what worms do.

- When worms move in the soil they go up and down and when they do this they help bring nutrients from the top of the soil down deeper into the ground.
- This process also helps to aerate the soil- making air available for plant roots and open space for water when it rains

Supplies

- Earthworms
- Plates
- Some paper towels are helpful
- Somewhere to wash hands

Instructions

1. Pass plates out to each student or pairs*
    - Explain to them to only observe the worms- how do we observe? With our eyes only. **Please no touching.**
2. Looking at your worms, can you tell me what they look like?
    - Which end is the head? Tail?
        i. The end that is pointed and a little darker closest to the clitellum.
    - Now that you have found the head, can you tell me if your worm has eyes?
        i. They do not have eyes, but they do have receptors that help them sense whether it is dark or light
    - Do they have ears?
        i. No, but sensors on their body can sense vibrations of things moving around them
    - Look at their head, do they have a nose?
        i. Yes, but it does not help them breathe. Their nose helps them to shovel food into their mouths.
    - If they do not breathe through their noses, how do they breathe?
        i. Do your worms look a little slimy? That is because being wet helps them to absorb air through their skin and that is how they breathe.
    - How does your worm move?
        i. They move by reaching out and then pulling themselves forward
        ii. Their slimy secretions help them crawl and move through the soil
        iii. If you look closely at your worm, you may be able to see little bristles of hair that also help them move through the soil.
3. Last question, what does your worm feel like?
    - You can now touch your worm.
    - You can hold, pet, and touch your worm, but be gentle.
    - Please keep all worms at your seat and keep them to yourself.
    - You do not have to touch the worm, but we hope you do!
4. Allow students to touch and play with worms for the remaining time.
5. Once time is almost up, pick up all the worms and then the plates.
6. Once they have returned their worms, they may wash their hands.

For further investigation into worms you may allow the students to follow the *Worm Experiments* worksheet. You may also create your own experiments other than what we have listed.

Please clean and dry all supplies once finished (wet things grow mold!).

Frequently asked questions

- If you cut a worm in half does it grow into two worms?
    - No! If you cut a worm in half, you have two pieces of a dead worm. If the tail of the worm is cut, the head portion may survive and regrow a tail, but the tail will not grow a new head… it will die.
- How long is the longest worm?
    - The longest earthworm was found in South Africa and it was 22 feet long!
- Do worms like light or dark spaces?
    - They like dark places
- Where do worms go in the winter?
    - To survive freezing cold temperatures, worms must burrow to an area below the frost line wherever they live. This warmer soil down deep acts like a warm blanket and insulates the worms from the cold.
- How long do worms live?
    - 2-5 years on average
- Do worms have a skeleton?
    - No, but they have a lot of muscles
- Do they lay eggs?
    - Yes, the ring around them is the part where they lay eggs
    - If your worm does not have one, that means it is a young worm
- Is my worm a boy or girl?
    - They are both a boy and a girl. But, it still takes two worms to lay fertile eggs.
- Does my worm have a heart?
    - Earthworms have five hearts
- Does my worm bite?
    - NO! They cannot bite you
- How many kinds of worms are there?
    - There are approximately 2,700 different kinds of earthworms.
- We are 75% water. Earthworms are 90% water.

Worm Experiments

Light

1. Take a petri dish and remove the lid
2. Place a wet paper towel in the bottom so the worm does not dry out
3. Place a worm in the middle of the petri dish and put the lid back on
4. Cover half of the lid with a dark cloth or paper
5. Observe the worm for a few minutes and answer the questions below

What is the worm doing? Which direction is it moving?

Do you think the worm prefers the light or dark side better? Why do you think that is?

Moisture

1. Take a petri dish and remove the lid
2. Place a wet paper towel in one half
3. Place a worm half on and half off the wet paper towel and put the lid back on
4. Observe the worm for a few minutes and answer the questions below

What is the worm doing? Which side of the plate is it on?

Do you think the worm prefers the wet or dry location? Why do you think that is?

Sound

1. Take a petri dish and remove the lid
2. Place a wet paper towel in the bottom so the worm does not dry out
3. Place the worm in the middle of the petri dish and put the lid back on
4. Lightly tap one edge of the petri dish with a pencil or pen
5. Observe the worm for a few minutes and answer the questions below

What is the worm doing? Which side of the tube is it on?

Do you think the worm prefers a quiet place or one with movement? Why do you think that is?