

Soil Slump Test

Overview

Students will learn how to conduct a slump test and what that means for soil health.

Background

- What does a slump test show?
 - A slump test shows soil's ability to absorb and hold water and how well a saturated soil holds together.
 - Shows soil structure and resiliency through water absorption
 - Shows how soil would hold up under a heavy rain event
 - Important to understand that even years of conservation practices (no till cover crops) followed by one disturbance (tillage) the soil holds up better than soil with yearly disturbance
 - For each 1% of organic matter it can hold .3-1 inches of water
 - Hypothesis: management of soil affects the aggregate stability of the soil. A stable soil is better able to hold together and hold water over soils that are not stable.
- How does a healthy soil react to a slump test?
 - A healthy soil will absorb the water fast
 - A healthy soil will stick together in large aggregates (like a brownie)
 - A healthy soil will hold onto the water that it absorbed
- How does an unhealthy soil react to a slump test?
 - An unhealthy soil will take a long time to absorb water
 - An unhealthy soil will stick together like pudding
 - An unhealthy soil will not hold onto the water as well
- Why are these properties important to soil health?
 - Absorption- in a large rain event, fast absorption of water can prevent flooding which can be detrimental to surrounding land
 - Clumping- soil that sticks together when it is wet, reduces the amount of soil particles that can be washed away during a rain event (erosion)
 - Capacity- the more water that the soil can hold onto after being saturated, means less water can be washed away (erosion)

Supplies

- 2- small glass jars
- 2- sink strainers
- 2- soil samples (healthy & unhealthy)
- 2- paper plates
- Water

Directions

1. Take two small glass jars and fill $\frac{3}{4}$ full of water
2. Fill sink strainers full of two different soil samples (can compare healthy versus unhealthy)
3. At the same time place the sink strainers full of soil in the jars of water
4. Observe how fast each sample absorbs the water
5. Once water is fully taken up by the soil (you can help it along by gently pouring water on top if it is taking too long) then you can take the sink strainers and flip them upside down on a plate
6. Tip each plate slightly and look at the water around the soil.



Observation Questions

1. How fast did each sample absorb the water compared to the other?
2. Did the samples hold onto water when they slid around the plate?
3. If so, what was the water clean or dirty?
4. How well did the samples hold together when moved?
5. What does each sample look like?
6. What does each sample feel like?
7. What else do you notice about each sample?