SOIL RIBBONING TEST

By: Mikie McDonnell, California Rangeland Trust Stewardship Specialist

Overview:

In this activity, we will learn about the different components that make up soil and how varying levels of those components can affect things like water holding capacity and organic matter content.

The three main components of soil are sand, silt, and clay. These all differ in particle size, sand being the largest particle followed by silt and then clay. The smaller the particle size, the greater the water holding capacity. When we have a soil that is high in sand content, the larger pore space allows water to drain more quickly. When a soil has a larger clay content, water is held more tightly within those spaces and is slower to drain. This can be compared to clay being more wet to the touch at times.

Water holding capacity is an important concept to think about when we are examining soils as it goes beyond just the reality of how much something needs to be watered. Soil moisture is integral to the microorganism ecosystem that build rich soil profiles and cycle nutrients that can be utilized by plants. Plant roots in turn hold soil in place and reduce erosion that can drastically change landscapes and entire watersheds.

Objectives:

After completing this activity, participants will be able to:

- Acknowledge and explain the soil components and how they dictate plant/landscape features

Setting:

An outdoor/indoor space with a supply station and an easy-to-clean floor; seating is optional.

Duration:

20 to 30 minutes

Materials:

- Jar of soil
- Cup of water
- Paper plates
- Ruler

Procedure:

1. Take a small handful of soil.
2. Add enough water to make it into a solid ball. If you cannot make a ball, it reflects a sand-heavy soil.
3. Feel the ball with your fingers to find out if it is gritty (sand), silky (silt), or plastic/sticky (clay).
4. Reroll the ball with your thumb, then gently press it out over your forefinger to make a hanging ribbon.
5. If you can make a short ribbon, the soil tecture is loamy, a mixture of sand and clay. The longer ribbon, there is more clay in your soil.
6. Make note of your ribbon lengths and refer to the chart on the next page to figure out what type of soil that is present.

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TYPES OF SOIL

SOIL NAME	LENGTH AND DESCRIPTION
Sand	***Ribbon will not form,*** grains will adhere to the fingers that are molding the soil
Loamy Sand	***Ribbon: 5mm,*** will form into a ball slightly, but it will not hold
Clayley Sand	***Ribbon: 5 to 15mm,*** sticky when wet, slight hold
Sandy Loam	***Ribbon: 15 to 20mm,*** sandy to touch, but the mold will hold barely
Light Sandy Clay Loam	***Ribbon: 20 to 25mm,*** sandy to touch and visible, will hold to mold
Loam	***Ribbon: 25mm,*** mold is bonded and feels spongy, smooth to the touch, could feel greasy
Sandy Clay Loam	***Ribbon: 25 to 40mm,*** hold together, but visible sandy look and feel
Clay Loam	***Ribbon: 40 to 50mm,*** smooth to manipulate and will hold strong
Sandy Clay and Light Clay	***Ribbon: 50 to 75mm,*** light clay- smooth to the touch, sandy clay- can see, hear, and feel sand grains, resistant to breaking
Light Medium Clay	***Ribbon: 75 to 85mm,*** mold is smooth to the touch, some-what resistant to breaking
Medium Clay	***Ribbon: 85 to 100mm,*** smooth, very moldable with out break-age, can be resistant to ribboning
Heavy Clay	***Ribbon: 100+ mm,*** smooth, handles like stiff plastic, can be formed into rods without fracture, resistant to ribboning fracture