

THE OLD SAYING 'DULL AS DIRT' DOESN'T APPLY HERE



Particle sieves



Wet soil to form a ball



Begin squeezing soil between thumb and forefinger to make a ribbon.



The length of the ribbon before breaking and grittiness of the soil determines the soil texture.

Brian Sebade

Soils might not appear interesting, but they are one of the most crucial components of a successful garden, ranch, or farm.

Soils contain different chemical, physical, and biological properties that determine their interactions with water, nutrients, vegetation, and animals. These properties are determined by the five soil forming factors – time, parent material, topography, climate, and vegetation.

Soil Particle Size Categories

There are three general size categories for particles within a soil: sand, silt, and clay.

Sand is the largest particle size category ranging from 2 to 0.05 mm in diameter; silt is the next largest at 0.05 to 0.002 mm in diameter; and clay is the smallest particle size at 0.002 to 0.0002 mm in size.

Soils are separated into groups (called soil texture) based on the percentage of sand, silt, and clay. Knowing soil texture is important because each texture has specific characteristics and properties, such as water and nutrient retention. Sandy textured soils, for example, hold less water compared to clay soils; however, water in sandy soils is generally more accessible to plants than in clay soils. Loamy soil texture has a mix of sand, silt, and clay.

Why Care?

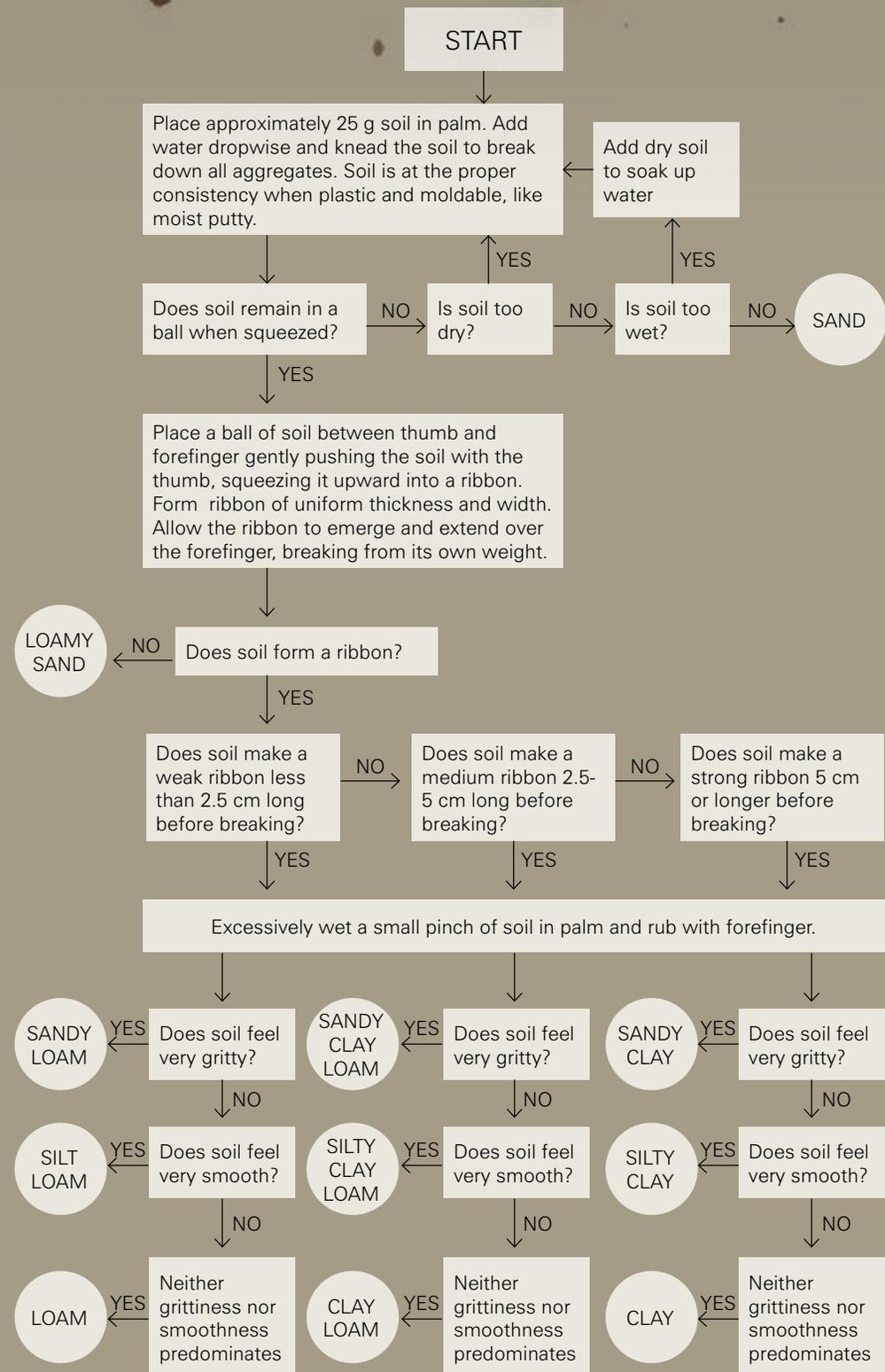
If you want to seed native plants on a bare hillside, knowing the soil texture and whether the seed mix will flourish in that soil texture is important. Here's an example. Both needle-and-thread grass, *Hesperostipa comata*, and green needlegrass, *Nassella viridula*, are native to Wyoming and grow best during the early part of the growing season. While similar, needle-and-thread grass prefers sandy soils whereas green needlegrass generally occupies clay soils. Soil texture can also greatly influence irrigation amounts and timing.

How to Determine Soil Texture

Soils have different layers. Each layer holds its own unique texture and properties. The uppermost layer greatly influences plants often making it of greatest interest for sampling. The top layer of soil is just below the litter and organic material on top of the soil.

There are several ways to determine the texture of your soil:

1. **Taking a soil sample and having it analyzed at a soil testing lab.** This method will cost money and takes time but is the most accurate. Testing packages usually include other information regarding the pH and nutrient levels of your soil. Local University of Wyoming



Extension offices can direct you to the nearest lab.

2. **Using the Web Soil Survey, a free online program courtesy of the Natural Resources Conservation Service.** This program uses an electronic soil survey map that allows a user to draw a rectangle around their area of interest to obtain soil texture and other information. Although this is a quick, online service, soils are mapped at a very large scale so may not be accurate for small or unique areas.

3. **Particle sieves to determine soil texture.** For this method, the soil sample is dried and broken apart. A set of sieves is then used to separate the dry soil. The sieves will only accurately collect particles to 0.05 mm (remember, sand particles are 2-0.05 mm). The remaining silt and clay-sized particles are then placed in a cylinder of water with a dispersing agent. The percentage of clay and silt is calculated based on how fast the particles settle. The method is technical and takes practice to become proficient.

4. **Hand texturing is the last method (see chart left).** The hand texturing method is quick and simple to use and only requires a small amount of water, a handful of soil, and a hand texturing guide. While not as accurate as sending a sample to a lab, with a little training and practice, it can be a very reliable and useful method. The hand texturing guide is a product from the U.S. Department of Agriculture.

To hand texture, grab a handful of soil and add a small amount of water, mixing and rolling until it forms a

ball. Once wetted all the way through, squeeze the soil between your thumb and forefinger to make a ribbon. The length of the ribbon and grittiness of the sample will determine the soil texture. For sandy soils, the individual sand particles can be seen when wetted in the palm of the hand.

Soils may not get a lot of praised, aesthetic reviews but serve a crucial function in the natural world. Understanding the soil texture at your property provides a solid base for making smart planting, watering, and plant variety selection decisions. Hopefully, this will translate to money-saving strategies over the long- and short-term management of your property.



Hand texturing, while not as accurate as other tests, can be a reliable method.

No way is **Brian Sebade** dull. He is a University of Wyoming Extension educator based in Crook County and also serving Weston, Johnson, Sheridan, and Campbell counties. Contact him at (307) 283-1192 or at bsebade@uwyo.edu.

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