Soil Textures

Soil texture refers to the composition of the soil in terms of the amounts of small (clays), medium (silts), and large (sands) size particles. The primary particles of sand, silt, and clay make up the inorganic solid phase of the soil. These particles often become aggregated together with each other and other parts of the soil, most importantly soil organic matter.

In general, the size of soil particles and their spacing determine how much water can flow through the soil. The larger the spacing, or pore size, the greater the infiltration rate. Thus, sandy soils will have high infiltration rates because pore sizes are large and there are no finer materials to block the pores. The soil texture also influences how much heat and nutrients will be stored in the soil profile.

Sandy soils drain better than soils that are clay rich. In general, the smaller the soil particle size distribution, the slower it will drain. Sometimes silt may have the same particle size distribution as clay, but clay will retain more water for longer periods of time than silt. This can be explained by the shape of the soil particles. Clay particles are planar whereas silt particles are spherical. Water basically gets stuck between the planar plate shaped clay particles and thus slows the flow of water.

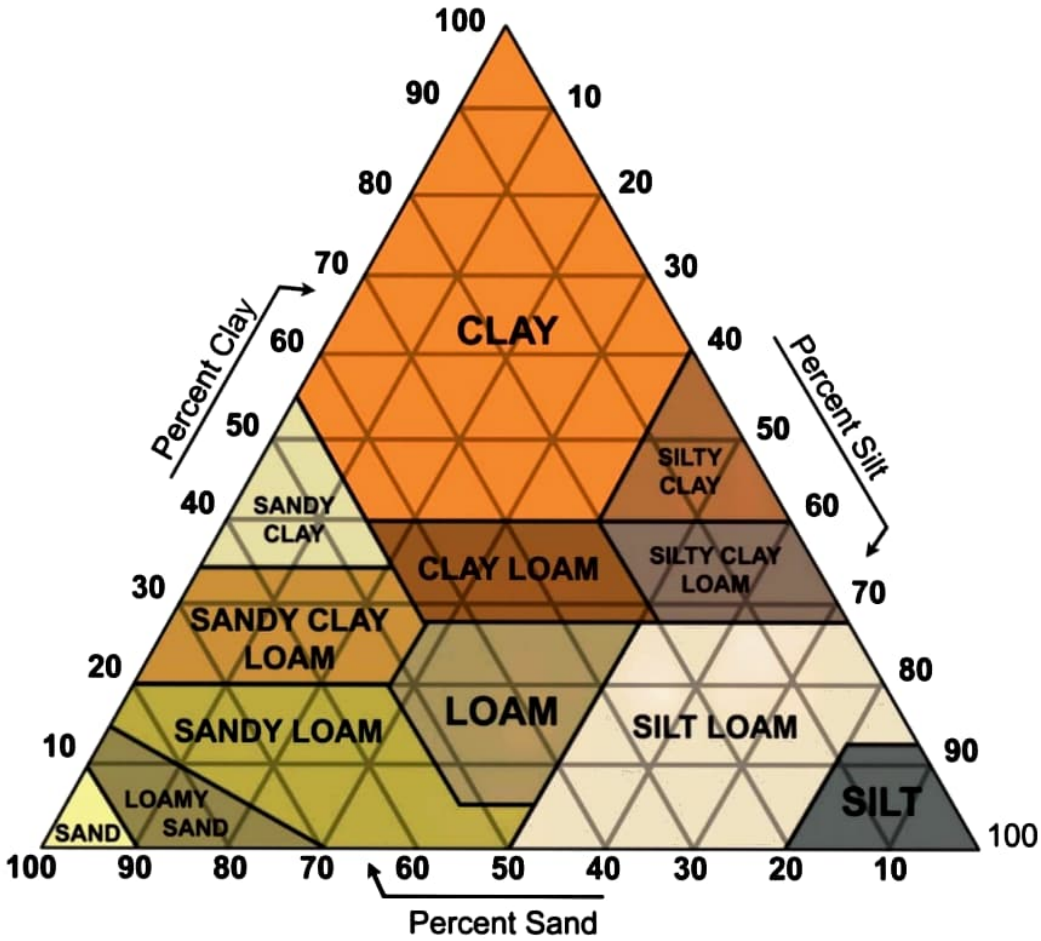
An easy way to help determine what type of soil you have is to simply feel it to determine the texture and thus what the primary makeup of the soil is. Grab a baseball size portion of the soil in your hands and wet the soil with water, working the moist soil with your hands. The stickier it is, the more clay there is. The “soapier” the soil feels the higher the silt content. Grittiness is indicative of sand.

In the United States, twelve major soil texture classifications are defined by the USDA. The twelve classifications are sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. Soil textures are classified by the fractions of each soil component (sand, silt, clay) present in the soil. Classifications are typically named for the primary constituent particle size or a combination of the most abundant particles sizes, e.g. “sandy clay” or “silty clay”. A fourth term, loam, is used to describe equal properties of sand, silt, and clay in a soil sample, and lends to the naming of even more classifications, e.g. “clay loam” or “silt loam”.

Texture is important because it influences:

- the amount of water the soil can hold
- the rate of water movement through the soil
- how workable and fertile the soil is.

For example, sand is well aerated but does not hold much water and is low in nutrients. Clay soils generally hold more water, and are better at supplying nutrients.



Soil textural triangle