



What is Soil Texture?

Soil texture is the term used to describe the sizes of the soil particles. More specifically, what is actually being measured are the proportions of the different sizes of the soil particles.^{1,2,3} Sand particles are the largest and measure between 0.05 – 2 mm. Silt particles are smaller in size and measure between 0.002 – 0.05 mm. Clay particles are the smallest or finest and are less than 0.002 mm.² Soil texture is described by the classes of soil texture and a standard format used to illustrate the relationship between soil textural classes is the soil texture triangle.^{2,3}

Some growers who have a lot of experience handling soil are able to feel the differences between soil texture classes. They're able to take a small portion of soil in their hands, roll it out, smear it in their palms, and squeeze it between their fingers to separate the various particles.

Not everyone is able to feel the difference so there are more precise methods used to differentiate soil texture classes. Soil texture can be measured by dispersing the soil particles using a soapy or salty solution and measuring the quantities of soil particles settling out at different time increments. This method is based on the fact that larger soil particles (i.e., sand) will settle more quickly relative to the other finer particles.²

Soil texture can also be measured using a special hydrometer that measures the density of the soil solution suspension.² After the proportions of sand, silt, and clay have been determined, the soil texture class can be identified using the soil texture triangle.²

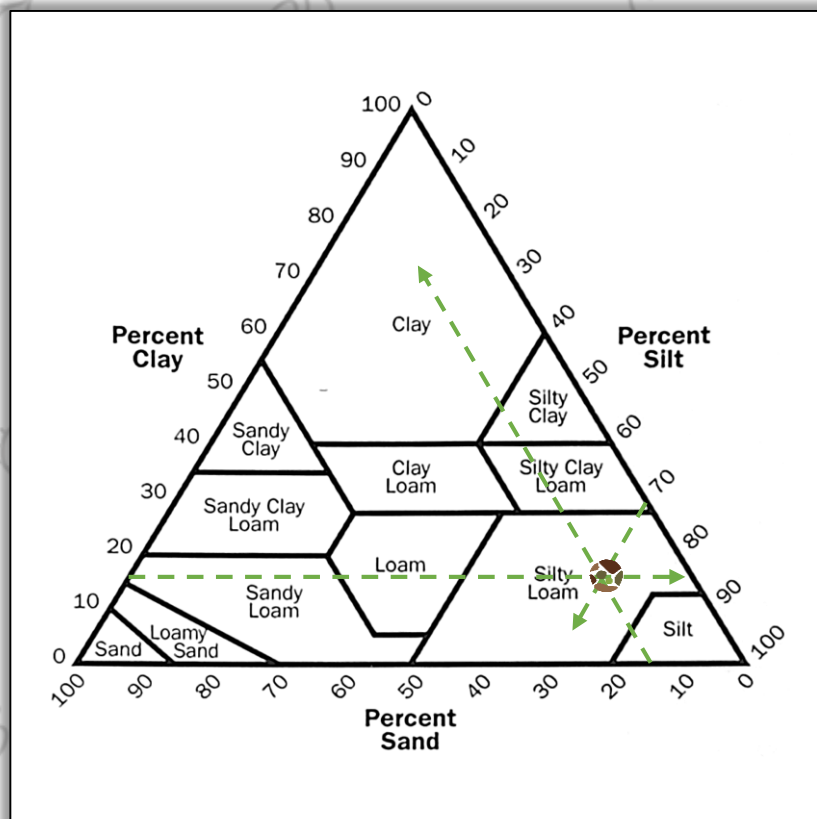


SoilHealth.ca uses a stylized interpretation of the standard soil texture triangle in our Soil Health Report to indicate the texture of your soil sample. It roughly approximates the major gridlines between classes and uses colour to highlight the percent of clay, sand, and silt particles. The white target marker helps you to quickly, visually interpret your soil texture class.



The traditional soil texture triangle shows the relationship between the class name of a soil and its particle size distribution.^{2,3} If a soil has been determined as being 15% sand, 70% silt, and 15% clay it would be plotted on the triangle below corresponding with the location of our SoilHealth.ca logo: silty loam (also called silt loam). Reading the texture triangle may appear complicated at first, but it's easy to interpret using the data that has been collected indicating the proportions of sand, silt, and clay.

Here's a quick breakdown on how to use the traditional soil texture triangle:



Step 1. Plot the data point corresponding to the percent clay and extend a line inward that is parallel to the base of the triangle. We're using dashed green lines to represent our inward data projections.

Step 2. Locate the corresponding data point on the triangle base representing percent sand. Now extend a line from this point inward that runs parallel to the right side of the triangle (i.e., percent silt).

Step 3. Pinpoint the polygon shaped compartment in which these two lines intersect and you'll know the soil texture class.

Step 4. Now you know your soil texture class, but to ensure accuracy you're best to plot the third data point representing silt and repeat the step of projecting an line inward that runs parallel to the opposing side (i.e., percent clay).

Step 5. Confirm that all 3 lines intersect in the same soil texture class and do a happy dance like no one is watching...and if some is watching go ahead and dance anyway!

References:

1. Gregorich, E.G., et al. (Eds.). *Soil and Environmental Science Dictionary*. Canadian Society of Soil Science. CRC Press, 2001.
2. Munroe, Jake, et al. *Soil Fertility Handbook Publication 611, 3rd Edition*. Ontario Ministry of Agriculture, Food, and Rural Affairs. Province of Ontario, 2018.
3. Weil, Ray R., and Brady, Nyle C. *The Nature and Properties of Soils, Fifteenth Edition*. Pearson Education, 2017