

Soil Texture

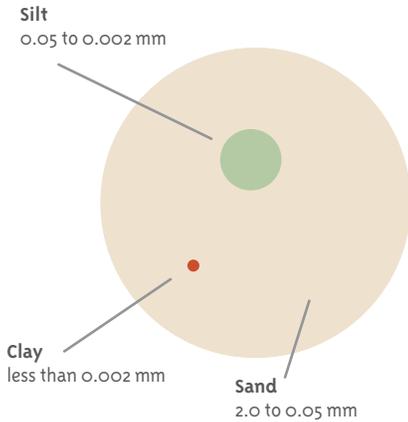


Fig. 1. Relative sizes of sand, silt and clay particles.



Fig. 2. Can you make a ribbon of soil?

Pick up a handful of soil and you can feel how fine or coarse it is. That feel comes from the size and relative proportion of mineral particles in the soil, and is known as *soil texture*. The particles that make up soil are categorized into three groups by size: sand, silt, and clay. Sand particles are the largest and clay particles the smallest. **(Fig.1)** The relative percentages of sand, silt, and clay are what gives soil its texture.

Soil texture can be determined in the laboratory or estimated in the field. The field method is referred to as “texture by feel.” Sandy soils do not form a ball when a moist sample is squeezed in the hand. Loamy soils will form a ball when moist but will not form a ribbon of more than 5 centimeters when pushed between thumb and forefinger. Clayey soils also form a ball when moist and will also form a ribbon of greater than 5 cm when forced between thumb and forefinger. **(Fig.2)**

The laboratory method is more specific and uses the relative rates at which different sized particles fall or settle in a liquid due to gravity. Using this method, the actual percentages of sand, silt, and clay in a soil can be determined. These percentages are plugged into the soil texture triangle to find the soil texture.

Then the soil texture triangle is used to determine the name of the soil texture. There are 12 soil textural classes. **(Fig.3a)** This triangle is used so terms like “clay” or “loam” always have the same meaning. Each texture corresponds to specific percentages of sand, silt, or clay.

Although a soil could be all sand, all clay, or all silt, that is rare. Instead most soils are a combination of the three. A clay loam texture soil, for example, has nearly equal parts of sand, silt, and clay **(Fig.3b)** and a soil with 15% clay, 20% silt, and 65% sand has a sandy loam texture. **(Fig.3c)**

When referring to loam one is only indicating that the soil has a given percentage of sand, silt, and clay; there is no mention of whether or not that soil has any organic matter in it or not. Knowing the texture helps us manage the soil.

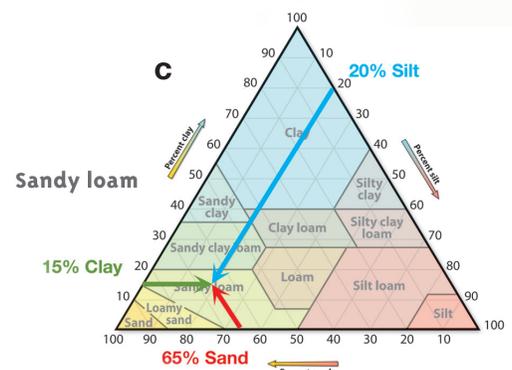
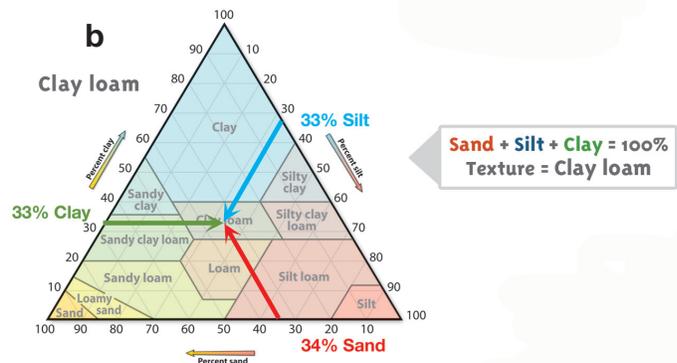
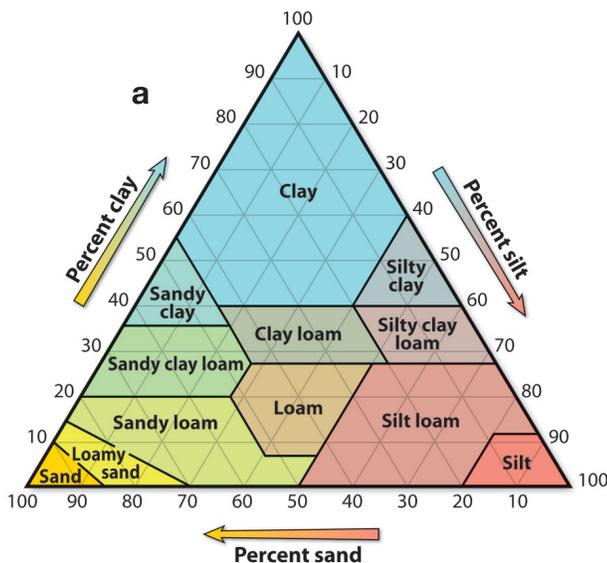


Fig. 3 a-c. Texture triangle, with several examples of how to describe soil texture using the triangle.