



SOIL

HEALTHY SOIL, HEALTHY PLANTS, HEALTHY LIFE

WHAT IS SOIL?

Soil is a medium comprised of soil particles, organic matter, water, air and living organisms (small animals, worms, insects and microbes). all of which are important to the overall health of the soil and the plants that grow in it. The three primary soil particles are sand, silt, and clay. They are derived from rock broken down over thousands of years by climatic and environmental conditions (rain, glaciers, wind, rivers, animals, etc.). The relative percentages of these components present make up the soil's texture. Texture is important to overall soil and plant health as it relates to soil porosity, which refers to the pore spaces where air and water reside. The ideal soil texture is a mix of sand, silt, and clay particles, known as a loam. In most cases the particles will not be balanced, and the soil will need to be altered by adding organic amendments.

source: <https://hgic.clemson.edu/factsheet/soil-texture-analysis-the-jar-test/>

SOIL TEXTURE

The largest, coarsest mineral particles are **sand**.

These particles are 2.00 to 0.05 mm in diameter and feel gritty when rubbed between your fingers.

Silt particles are 0.05 to 0.002 mm and feel similar to flour when dry.

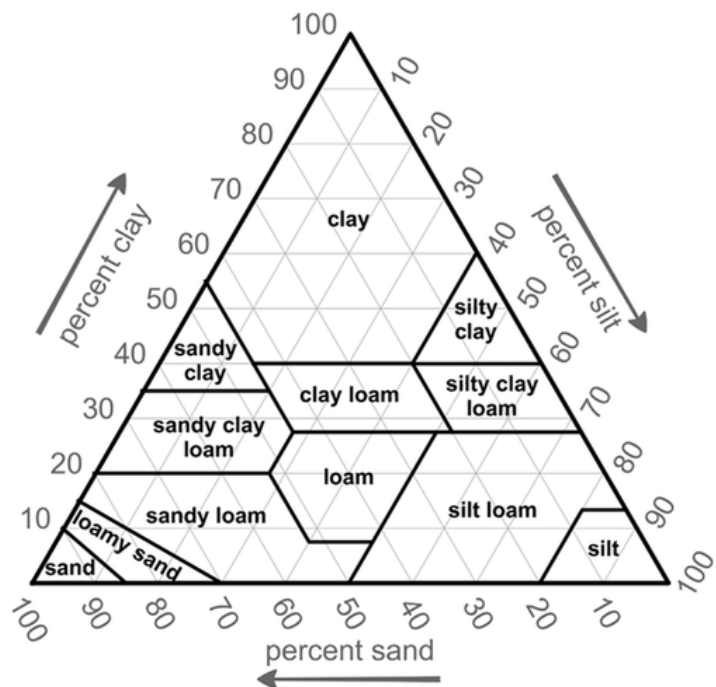
Clay particles are extremely fine, smaller than 0.002 mm. They feel sticky in your fingers when wet and clump to the point that you can't see an individual particle without a microscope. The proportion of these three mineral particle sizes determines the soil texture.



MUD SHAKE

To evaluate soil texture, use a simple jar test to determine the percentages of sand, silt, and clay. Once the percentages are calculated, the soil textural triangle can be used to determine the soil type. Knowing the soil's texture helps predict how it will behave under different conditions. It's the first step toward creating the best conditions for the plants to be grown.

- 1 Fill about half of an empty clear container with your soil, Then add water to the container until almost full. Close the lid and shake hard well, as if you were mixing a cocktail. Put the container down to let it all settle for about 24 hours or even more.
- 2 Observe how the particles settle in the container.
- 3 Three layers will clearly appear: Clay, Silt and Sand.
- 4 On top of the clay will be a thin layer of organic matter. Some of this organic matter may still be floating in the water. In fact, the top water should be unclear and full of floating organic sediments. If not, organic matter needs to be added to improve the soil's fertility and structure.



source: USDA soil texture triangle



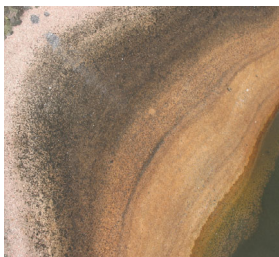
TYPES OF SOIL

CLAY SOIL



Rock hard when dry, lumpy and sticky to touch when wet. slow draining soil, contains many nutrients. slow to warm in spring. heavy to cultivate, especially when dry.

SILT



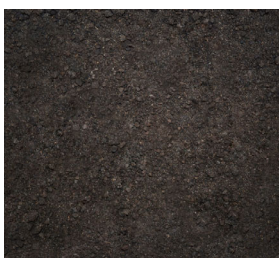
Can store considerable amounts of water. is richer in nutrients and more fertile. smooth to touch when moist. due to moisture this type of soil is cold and drains rather poorly. easily compacted.

SANDY SOIL



Largest particles. water drains rapidly, plants are unable to make full use of nutrients. warms up quickly in spring. tends to dry out in summer. Sandy soils are often dry, nutrient deficient and fast-draining. The nutrient- and water-holding capacity of sand soils can be improved through adding organic material.

PEATY SOIL



Dark in colour and soft to touch. rich in organic matter but low in nutrients highly water retentive. ability to hold water in dry months and protecting roots in wet months. good for plant growths.

CHALKY SOIL



Gritty and dry to touch. alkaline, stony and free draining. minerals will quickly drain from the soil, causing poor growths and yellowing of the leaves. improved by adding natural fertilizers.

LOAMY SOIL



Perfect, well balanced soil.

mix of clay, sand and silt. retains moisture but drains well. full of nutrients. easy to cultivate. air moves freely between soil particles down to the roots. warms up quickly in spring and doesn't dry out in summer.