

SOIL – TYPES:

Based on their texture and structure the soils are classified. There are four main soil groups: clay, sandy, silty and loamy. They each have different properties.



1. Clay Soil

Clay particles are the finest of all the soil particles. Clay soil feels lumpy and is sticky when wet and rock hard when dry. It consists of microscopic and sub-microscopic particles derived from the chemical decomposition of rocks.

Clay soil is poor at draining and has few air spaces. The soil will warm up slowly in spring and it is heavy to cultivate. If the drainage for the soil is enhanced, then plants will develop and grow well as clay soil can be rich in nutrients. They stick together readily and form a sticky or gluey texture when they are wet or dry. Clay is made of over 25 percent clay, and because of the spaces found between clay particles, clay soils hold a high amount of water. Clay expand when in contact with water and shrink when getting dry. Compared to sand particles, which are generally round, clay particles are thin, flat and covered with tiny plates. Organic clay is highly compressible and its strength is very high when dry, which is why it is used in construction as mud mortar.



Clay soils are the heaviest of soil types and are rich with nutrients. With clay soils, nutrients are stored for much longer and have a tendency not to leech away.

Clay soils hold onto nutrients so the plants have the food it needs and are also great for growing things that need a lot of water. These soils warm slowly in the spring.

2. *Sandy Soil*

Sandy soils are light and feels gritty. It drains easily, dries out fast and is easy to cultivate. Sandy soil warms up fast in spring and tends to hold fewer nutrients as these are often washed away during wetter spells.



It is most extensively used construction material. It consists of particles of rock and hard minerals, such as silicon dioxide. They are the largest type of soil particles, where each particle is visible to naked eye.

The bigger particle size of the sand gives wet or dry sandy soil a grainy texture when you rub it between your fingers, and it makes the soil light and crumbly even when you try to stick it together in your hand. The particle shape is angular, sub angular, rounded, flat or elongated. The texture is rough, smooth, or polished.

These soils warm up quickly in the spring and dry out quickly in the summer. Nutrients and water often leech away escaping to waterways before the plant can utilize them and are often acidic.

3. Silty Soil

Silty soil feels soft and soapy, it holds moisture and is usually very rich in nutrients. The soil is easily cultivated and can be compacted with little effort. This is a great soil for gardening if drainage is provided and managed.

Silt is a sediment material, more fertile than sandy soils with an intermediate size between sand and clay. Carried by water during flood it forms a fertile deposit on valleys floor.



Silt is a non-plastic or low plasticity material due to its fineness. Due to its fineness, when wet it becomes a smooth mud that you can form easily into balls or other shapes in your hand and when silt soil is very wet, it blends seamlessly with water to form fine, runny puddles of mud.

Silty soils are fertile soils that hold onto nutrients better than sandy soils. They have better water holding capacity than sandy soils and easier to work with than clay soils.

Loamy Soil

Loamy soil, a relatively even mix of sand, silt and clay, feels fine-textured and slightly damp. It has ideal characteristics for gardening, lawns and

shrubs. Loamy soil has great structure, adequate drainage, is moisture retaining, full of nutrients, easily cultivated and it warms up quickly in spring, but doesn't dry out quickly in summer. Loam is a mixture of clay, sand and silt and benefits from the qualities of these 3 different textures, favoring water retention, air circulation, drainage and fertility. These soils are fertile, easy to work with and provide good drainage. The clay and silt particles improve moisture retention while the sand minimizes compaction and improves drainage.



Depending on their predominant composition they can be either sandy or clay loam.

The way the other particles combine in the soil makes the loam.

For instance, a soil that is 30 per cent clay, 50 per cent sand and 20 per cent silt is a sandy clay loam, with the soil types before "loam" listed in the order their particles are most dominant in the loam. The labels "clay loam," "silt loam" and "sand loam" are used to refer to soils that are composed predominantly of those ingredients.

Sandy loam soil is a combination of *sand, silt, and clay.*



Loamy soils are drought resistant due to water holding capacity and faster to warm up in the spring compared to clay. They can hold nutrients making soil fertile. They are good in infiltration of air and water.

Depending on how soil was formed, some loamy soils contain stones that affect harvesting of some crops.

Simple Tests to Help Determine Your Soil Type

The water test

Pour water onto your soil. If it drains quickly, it is likely to be a sandy or gravelly soil, on clay soils the water will take longer to sink in.

Squeeze test

Grab a handful of soil and softly compress it in your fist.

If the soil is sticky and slick to the touch and remains intact and in the same shape when you let go it will be clay soil.

Loamy and silty soils will feel smooth textured and hold their shape for a short period of time.



Add small amounts of water to a small handful of soil, working to form a bolus



The bolus is at the appropriate moisture content when the bolus surface just glistens

Soil Squeeze Test

Clay soil will hold its shape and when poked it sits stubbornly in your hand



Sandy soil will fall apart easily as you open your hand



Loamy soil will hold its shape and when you give it a light poke it will crumble



learn easy

Settle test

Add a handful of soil to a transparent container, add water, shake well and then leave to settle for 12 hours.

JAR TESTING FOR SOIL TYPE



0 - 10% clay
0 - 10% silt
80 - 100% sand



10 - 30% clay
30 - 50% silt
25 - 50% sand



50 - 100% clay
0 - 45% silt
0 - 45% sand



10-30% clay
30-50% silt
25-50% sand

- Clay & silty soils will leave cloudy water with a layer of particles at the bottom.
- Sandy soils will leave the water mostly clear and most of the particles will fall, forming a layer on the base of the container.
- If the water is quite clear with layered particles on the bottom of the container with the finest particle at the top – this soil is likely to be a loamy one.

