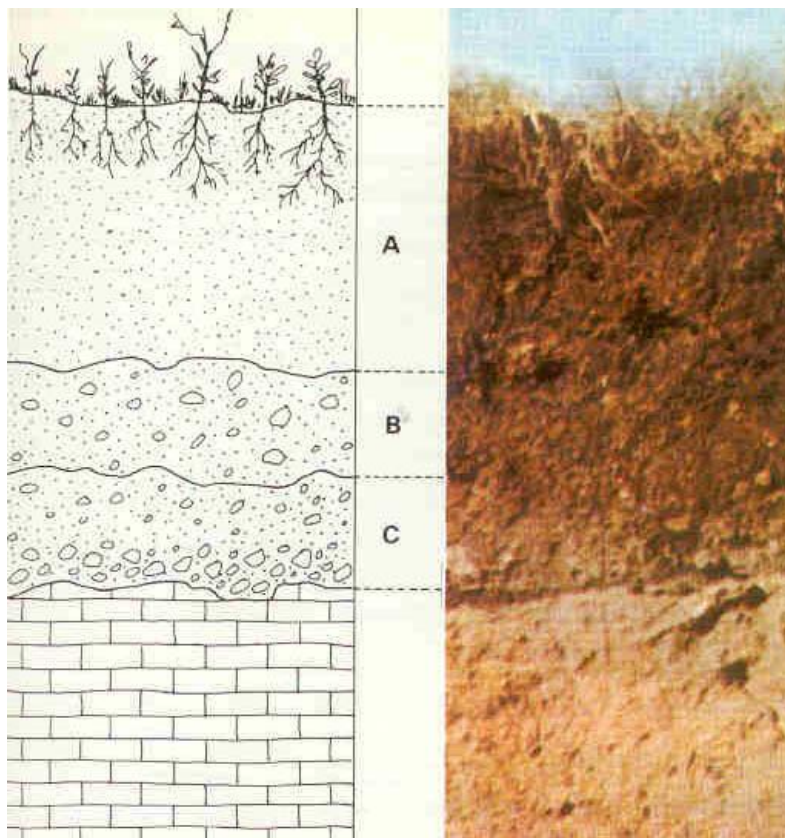


## Soil

Soil is a mixture of minerals, organic matter, gases, liquids, and countless organisms that together support life on Earth. Soil is called the Skin of the Earth and interfaces with the lithosphere, the hydrosphere, the atmosphere, and the biosphere. Soil is a major component of the Earth's ecosystem.



A, B, and C represent the soil profile, a notation firstly coined by Vasily Dokuchaev, the father of pedology; A is the topsoil; B is a regolith; C is a saprolite, a less-weathered regolith; the bottom-most layer represents the bedrock.

Soil acts as an engineering medium, a habitat for soil organisms, a recycling system for nutrients and organic wastes, a regulator of water quality, a modifier of atmospheric composition, and a medium for plant growth, in other terms one of the world's best providers of ecosystem services.

## Soil Texture

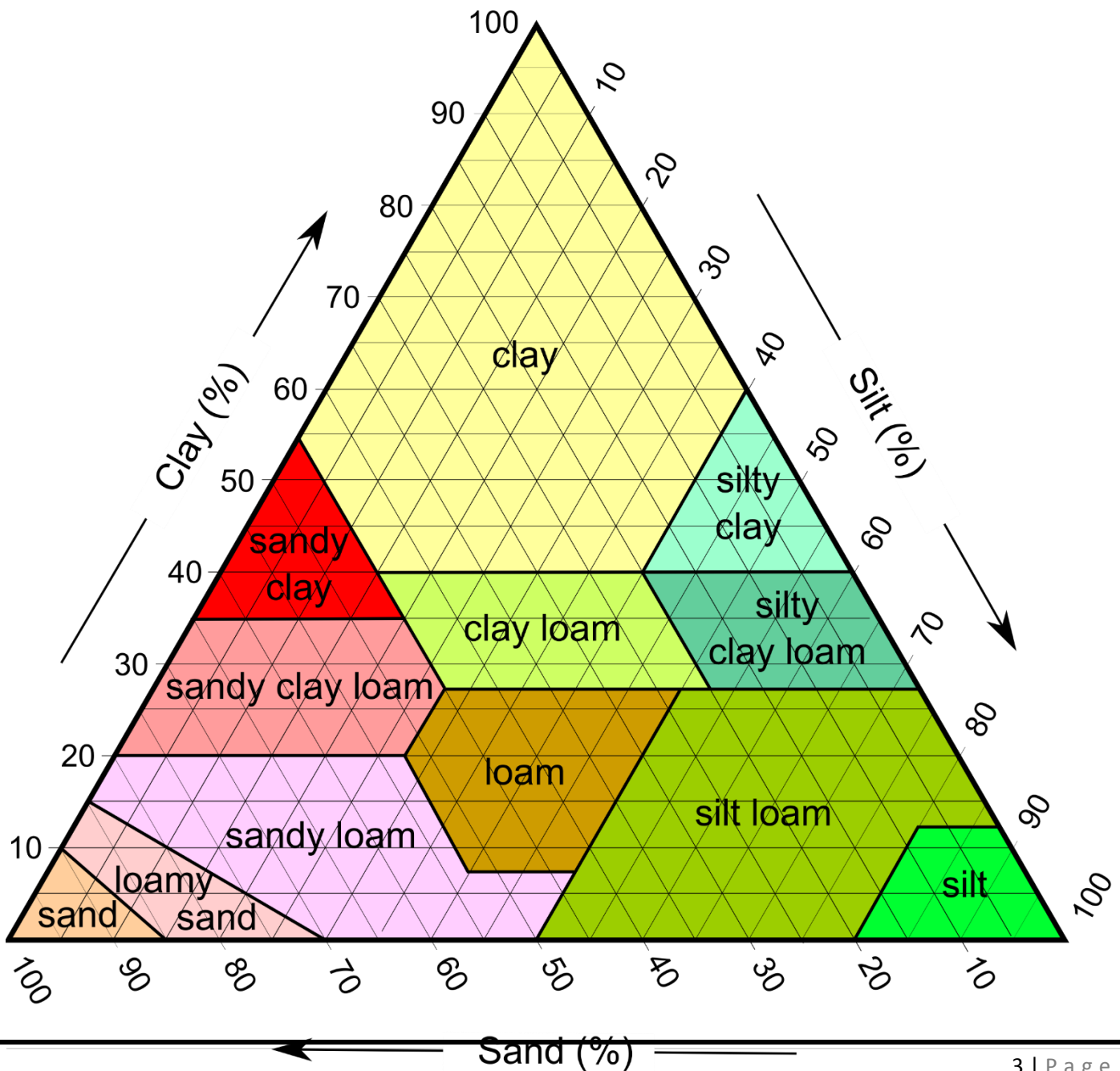
The mineral components of soil are sand, silt and clay, and their relative proportions determine a soil's texture. Properties that are influenced by soil texture, include porosity, permeability, infiltration, shrink-swell rate, water-holding capacity, and susceptibility to erosion.

**Influence of Soil Texture Separates on Some Properties of Soils**

Property/behavior	Sand	Silt	Clay
Water-holding capacity	Low	Medium to high	High
Aeration	Good	Medium	Poor
Drainage rate	High	Slow to medium	Very slow
Soil organic matter level	Low	Medium to high	High to medium
Decomposition of organic matter	Rapid	Medium	Slow
Warm-up in spring	Rapid	Moderate	Slow
Susceptibility to wind erosion	Moderate (High if fine sand)	High	Low
Susceptibility to water erosion	Low (unless fine sand)	High	Low if aggregated, otherwise high
Shrink/Swell Potential	Very Low	Low	Moderate to very high
Ability to store plant nutrients	Poor	Medium to High	High
Resistance to pH change	Low	Medium	High

### Textural Triangle

Soil texture is the relative proportions of sand, silt, or clay in a soil. The soil textural class is a grouping of soils based upon these relative proportions. Soils with the finest texture are called **clay** soils, while soils with the coarsest texture are called **sands**, while **Silt** is between sand and clay . However, a soil that has a relatively even mixture of sand, silt, and clay and exhibits the properties from each separate is called a **loam**.



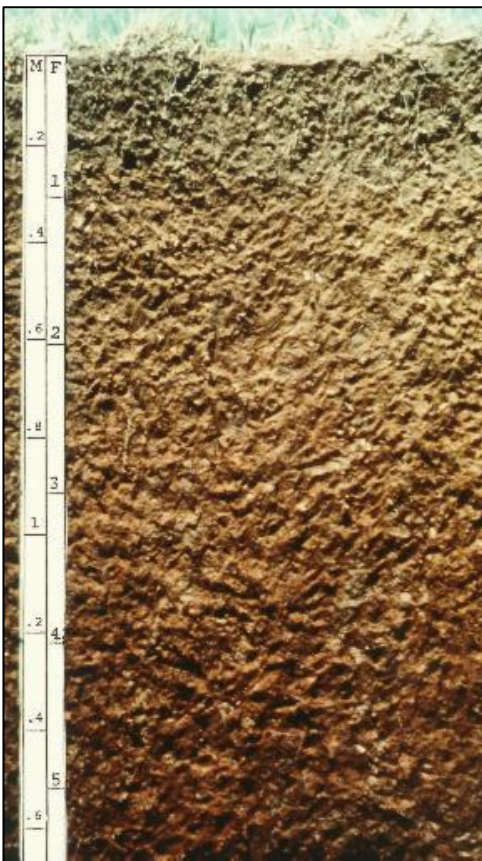
## Soil Taxonomy

In the USDA soil taxonomy. The names of the orders end with the suffix -sol. which are:

**Alfisol** - soils with aluminium and iron. They have horizons of clay accumulation, and form where there is enough moisture and warmth for at least three months of plant growth. They constitute 10.1% of soils worldwide.

**Andisol** - volcanic ash soils. They are young and very fertile. They cover 1% of the world's ice-free surface.

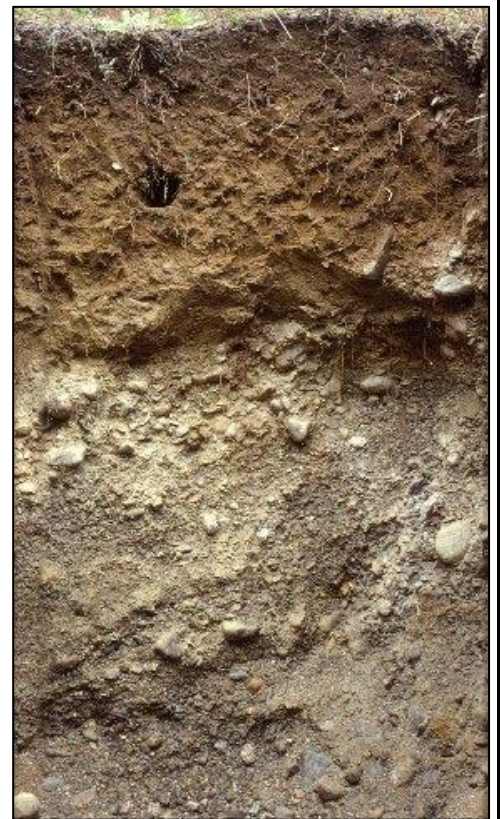
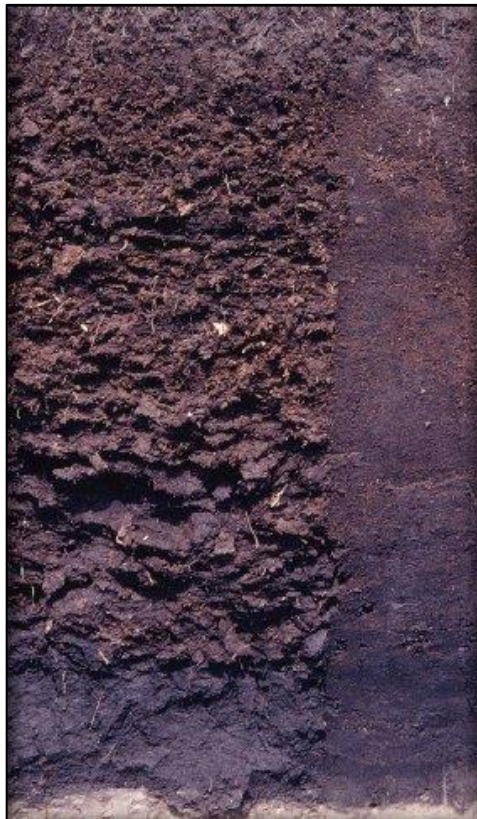
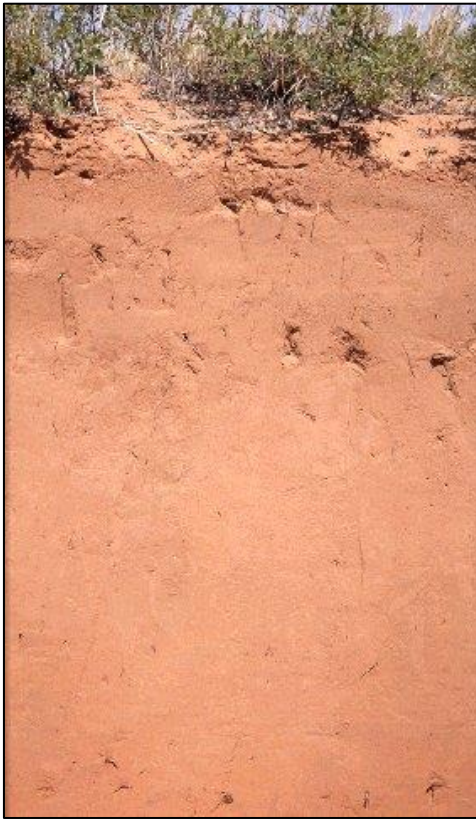
**Aridisol** - dry soils forming under desert conditions which have fewer than 90 consecutive days of moisture during the growing season and are nonleached. They include nearly 12% of soils on Earth.



**Entisol** - recently formed soils that lack well-developed horizons. Commonly found on unconsolidated river and beach sediments of sand and clay or volcanic ash, they are 18% of soils worldwide.

**Histosol** - organic soils, formerly called bog soils, are 1.2% of soils worldwide.

**Inceptisol** - young soils. They have subsurface horizon formation. They constitute 15% of soils worldwide.



**Mollisol** - soft, deep, dark fertile soil formed in grasslands and some hardwood forests They are 7% of soils worldwide.

**Ultisol** - acid soils in the humid tropics. They make up 8% of the soil worldwide.

**Vertisol** - They are clay-rich and tend to swell when wet They are difficult to farm or to construct roads and buildings due to their high expansion rate. They constitute 2.4% of soils worldwide.

