Soil Types

Soil is made of varying amounts of silt, sand and clay.The proportion of these components determines if a soil is a sand, loam or clay or any combination of these. Soil texture has a number of implications for management because it effects the ability of the soil to hold water and its ability to withstand cultivation and compaction.
It is easy to assess texture in the paddock by mixing a small amount of soil with water in your hand, just enough to form a slightly sticky ball. The way the sample feels in your hand and the way it forms a ribbon, allows you to determine the texture.

Use the following table to assess your soil:

Texture class	Properties of moist soil ball
Sands	Won't form a ball. Forms a ribbon less than 10 mm. Feels very sandy and not sticky at all. Clay content 0 to 10%.
Sandy loams	Able to form a ball. Forms a ribbon 15-25 mm long. Feels sandy and slightly sticky. Clay content 10 to 20%.
Loams	Forms a smooth ball, ribbons to 25-40 mm. Feels slightly sandy and moderately sticky. Clay content 20-30%.
Clay loams	Forms a smooth, plastic ball, ribbons to 40-50 mm. Almost no sandy feel. Distinctly sticky. Clay content 30-35%.
Light clays	Forms a smooth, plastic ball, ribboning to 50-75 mm. Very sticky. Clay content 35-45%.
Medium to heavy clays	Forms a smooth, extremely plastic ball. Ribbon more than 75 mm. Feels very sticky with no sand. It is more difficult to mould than light clay. Clay content greater than 45%.

Soil structure

Soil is comprised of three-dimensional arrangements of solid particles and pores. Soil structure is determined by the distribution and the size of these soil aggregates and pore spaces.

Soil structure is influenced by its physical, chemical and biological characteristics. Good soil structure is vital, as it can affect the availability of air, water and nutrients for plant growth. Agricultural practices can significantly alter soil structure. Poor soil structure can greatly reduce plant growth, making it difficult for plants to obtain water, air and nutrients and also impeding seedling emergence due to surface crusting.

The structure and texture of soil affects the soil's ability to hold or drain water and withstand cultivation and compaction by machinery and stock. For example, sandy soils have low water holding capacity and are easily damaged. On the other hand, heavy clay soils are very dense, do not drain water very well and have small pore spaces.

Sand is *weakly structured* because the sand grains are only weakly bonded together. A very heavy dispersive clay which sets hard into large sheets when dry has a *massive structure*. Most soil types fall in between these two structures.

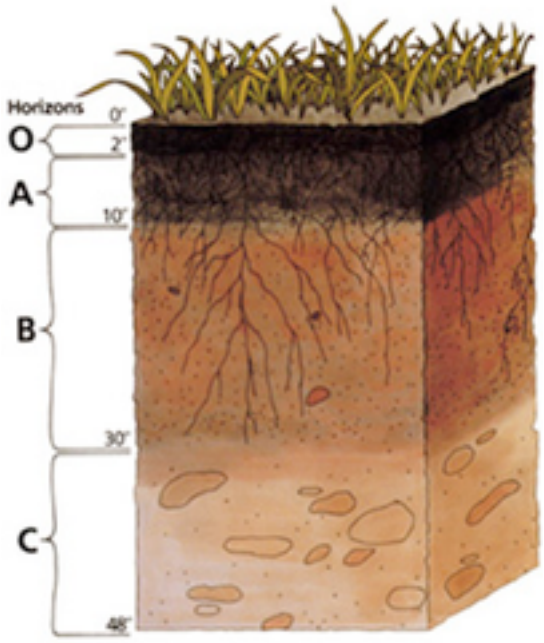
An ideal soil has well formed, loose aggregates which hold water but have adequate drainage and are not easily broken down by machinery and stock.

Soil structure & organic matter

- Organic matter is the remains of living things or products of living things in the soil. Organic matter is important for soil structure.
- Organic matter on the soil surface (such as wheat stubble residues) protects the surface from the action of raindrops, reducing surface compaction and hardsetting. Organic matter also helps to bind sandy and silty soils together and also improves water infiltration through the soil. Organic matter also acts as a buffer against the forces of compaction.
- Continuous cropping and cultivation can diminish organic matter in the soil very quickly, leading to soil structural decline.

http://www.dpi.vic.gov.au/agriculture/farming-management/soil-water/soil/small-farm-soil-physical-properties

Soil Layers



O) **Organic matter**. Litter layer of plant residues in relatively undecomposed form.

A) **Surface soil**.Layer of mineral soil with most organic matter accumulation and life within the soil. This layer eluviates (is depleted of) iron, clay and alunimum, organic compounds, and other soluble constituents. When eluviation is pronounced, a lighter colored "E" subsurface soil horizon is apparent at the base of the "A" horizon. A-horizons may also be the result of a combination of soil bioturbation and surface processes that winnow fine particles from biologically mounded topsoil. In this case, the A-horizon is regarded as a "biomantle".

B) **Subsoil** This layer accumulates iron, clay, aluminum and organic compounds, a process referred to as illuviation.

C) **Parent material**: Layer of large unbroken rocks. This layer may accumulate the more soluble compounds