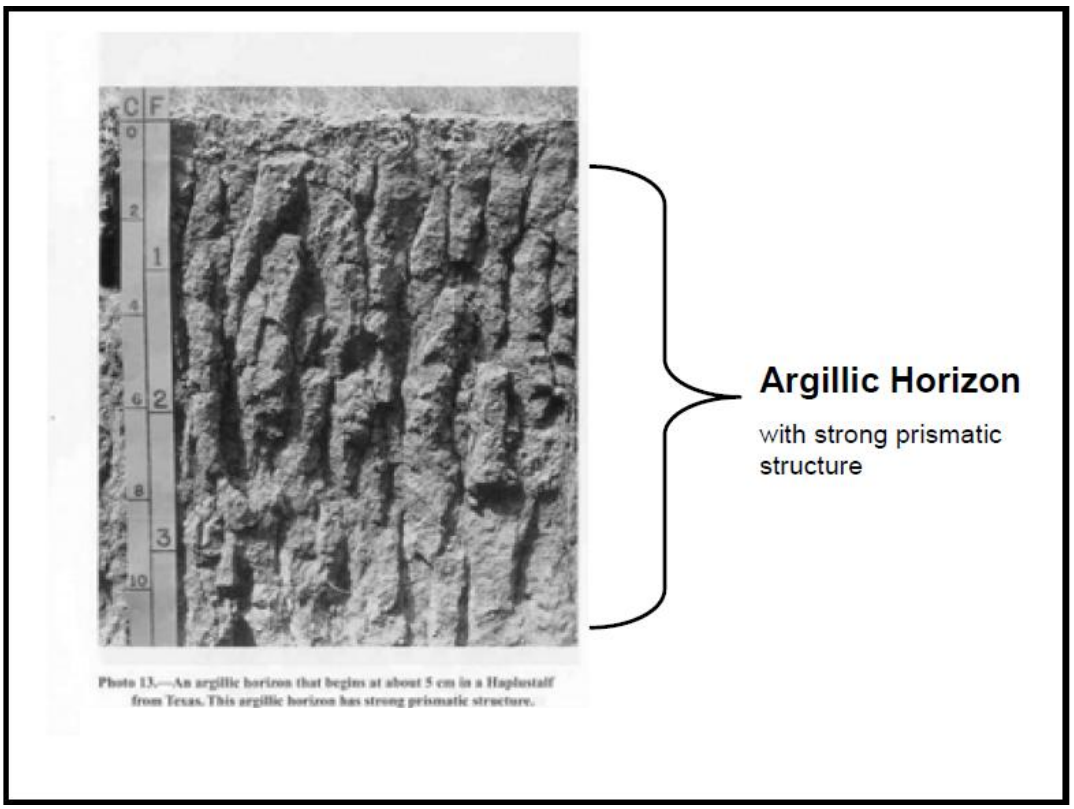
Type of sub soil:

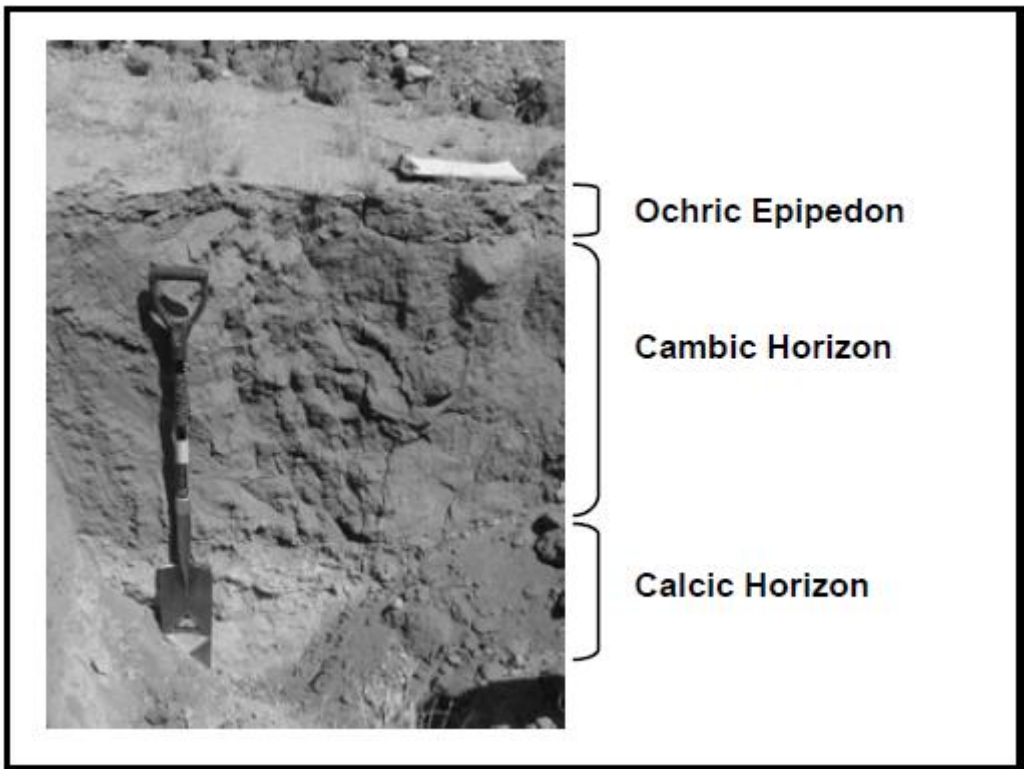
Some specific kinds of subsoils are common and important. These are:

1. **Argillic** (a clay accumulation, very common in temperate zones). In general this is a B horizon that has at least 1.2 times as much clay as some horizon above or 3% more clay content if the eluvial layer has < 15% clay or 8% more clay if eluvial layer has > 40% clay. It is formed by eluviation of clay and illuviation argillans are usually observable unless there is evidence of stress cutans. It should be at least 1/10 as tick as all overlying horizons or more than 15 cm, whichever is thinner.



2. **Calcic** (an accumulation of $CaCO_3$, common in arid & semi-arid lands). This layer, at least 15 cm thick, has secondary accumulation of carbonate, usually of Ca and Mg. in excess of 15% calcium carbonate.

3. **Cambic** (a weakly developed B horizon, often found in young soils). This is a subsoil horizon of very fine sand, loamy fine sand or fine texture, with some weak indication of either an argillic or spodic horizon, but no enough to qualify as either for example; less than 1.2 times as much clay as an overlying horizon.



4. **Gypsic horizon;** this is a horizon of calcium sulfate enrichment. It contains at least 5% more calcium sulfate than underlying material and is more than 15 cm thick.

5. **Kandic horizon;** this horizon is composed of low activity clays, ≤ 16 meq/100 gm clay CEC at pH 7 and ≤ 12 meq/100 gm clay ECEC. It has clay content increase at it is upper boundary of 1.2 x clay within a vertical distance of 15 cm that is abrupt or clear textural boundary. Clay skins may not be present.

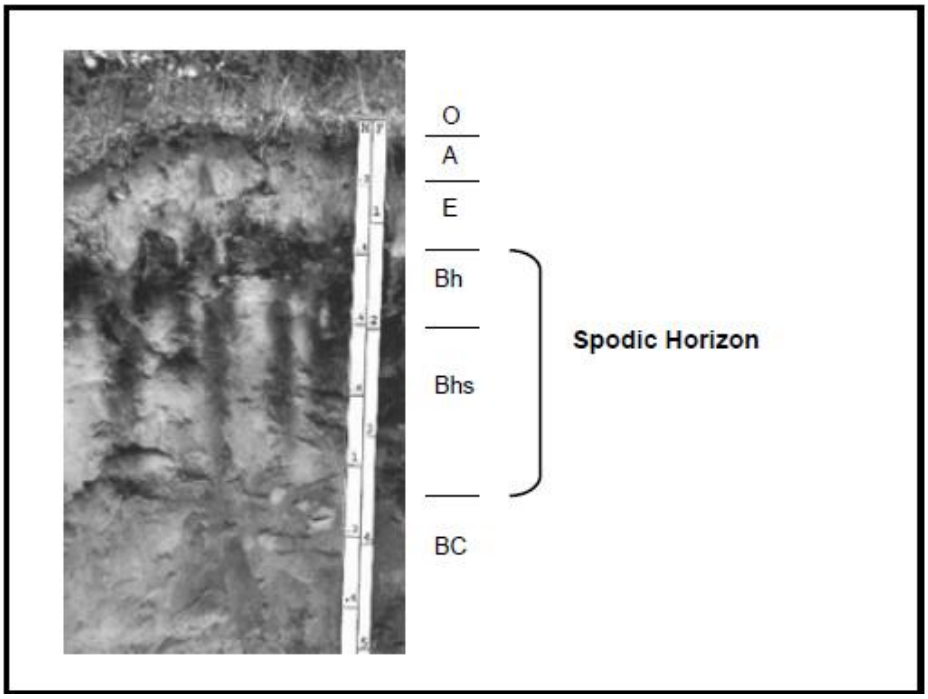
6. **Natric horizon:** This horizon meets the requirement of an argillic horizon but also has prismatic or columnar structure and over 15 percent of the CEC is saturated with Na^{+}, or has more exchangeable Mg^{++} plus Na^{+} than Ca^{++} plus Na^{+} exchange acidity at pH 8.2.
7. **Oxic horizon:** This horizon is at least 30 cm thick and is sandy loam or finer. It has a high content of low charge 1:1clays with an apparent ECEC of 12 or less meq/100gm clay and 16 or less meq/100gm clay CEC at pH 7. Clay content increase at the upper boundary is more gradual than required by the kandic horizon. It contain 10% percent weatherable minerals in the sand and 5% by volume rock structure.
8. **Petrocalcic horizon:** This is an indurated calcic horizon. It has hardness of three or more (moh's scale) and at least *1/2* of dry fragment breaks down when immersed in water.
9. **Petrogypsic horizon:** This is a strongly cemented gypsic horizon. Dry fragments will not slake in H_2O.

10. **Placic horizon:** This is single, thin (2 to 10 mm thick) dark reddish brown to black iron or manganese pan that lies within 50 cm of the soil surface, and slowly permeable.

11. **Salic horizon:** This is ahorizon at least 15 cm thick of secondary soluble salt enrichment (over 2 to 3 percent depending on thickness).

12. **Sombric horizon:** This free draining horizon not under an albic horizon, has the darkness and base saturation status of an umbric epipedon and has formed by illuviation of humus but not of Aluminum or sodium.

13. **Spodic horizon:** This horizon has an illuvial accumulation of free sesquioxides and/or organic matter. There are many specific limitations dealing with Al, Fe, O.M, and clay ratios, depending on weather the overlaying horizon is virgin or cultivated.



14. **Sulfuric horizon:** This is a mineral or organic soil horizon that has a pH < 3.5, is toxic to plant roots, and has yellow mottles of jarosite.

Combination Horizon

Horizons with two distinct parts that have recognizable properties of the two kinds of master horizons indicated by the capital letters.

The two capital letter designating such combination horizons are separated by a (/), e.g. E/B, B/E or B/C. most of the individual parts of one horizon component are surrounding by the other.

The designation may be used even when horizons similar to one or both of the components are not present, provided that the separate component can be recognized in the combination horizon. The first symbol is that of the horizon with the greater volume.

Degraded or Destroyed Soils:

Degradation occurs through nutrient depletion as we break the nutrient cycle by harvesting crops and removing them from the field. Erosion of soil can be catastrophic as the topsoil blows or washes away, leaving only lower-quality B horizon as a plant growth medium. Humus levels can diminish due to decomposition if the soil is used to produce annual crops and is left bare much of the year. Many pollutants, including salt, can also degrade or destroy a soil.