

SOIL STRUCTURE DETERMINATION Lab III

Objective:

- A. To identify different types of soil structure.
- B. To determine structural sizes and grades.

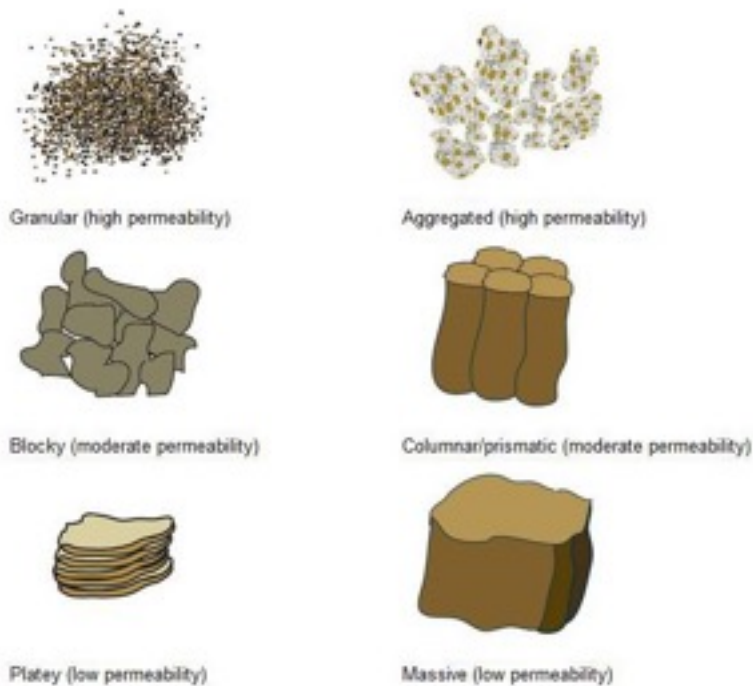
Definition:

Soil structure refers to the aggregation of individual soil particles into compound groups or clusters of particles. These are separated by natural lines, zones or surfaces of weakness. Individual aggregates are referred to as peds. The grade, class and type of structure is usually described for each sample. If a sample lacks structural arrangement, it is considered to be structure less. Soil texture is influenced by texture. Soil texture influences soil properties such as aeration, water holding capacity, drainage, infiltration etc.

The type of structure refers to the shape of the peds.

- a. Granular Structure is spherical shaped aggregates bounded by curved or very irregular surfaces which have slight or no accommodation to the faces of the adjoining ped faces. Particles are arranged around a point.
- b. Sub-angular Blocky Structure is block like aggregation. The blocks are polyhedrons bounded by flattened or rounded faces and have rounded corners. The faces are casts or molds formed by the faces of the adjoining peds. Particles are arranged around a point.
- c. Angular Blocky Structure is similar to sub-angular blocky, but the polyhedrons are bounded by flattened faces and have sharp edges or corners.
- d. Platy Structure is plate-like aggregates with horizontal dimensions considerably greater than the vertical dimension. Particles are arranged about a horizontal plane.
 - e. Prismatic Structure is prism-like aggregates with vertical dimension considerably greater than horizontal dimension. Particles are arranged about a vertical line. Peds are bounded by vertical faces which are casts or the molds formed by the faces of adjoining peds and have flat caps.
- f. Columnar Structure is similar to a prismatic structure except that it has rounded caps.
- g. Single Grained Structure has no observable aggregation. Individual particles are non-coherent and easily distinguishable.
- h. Massive Structure has no observable aggregation. Individual particles are coherent, but the mass lacks planes of weakness.

Types of Soil Structure



Size: There are five classes of soil that are recognized for each primary type of soil structure

Size Class	Granular	Platy	Blocky (1)	Prismatic (2)
Very fine	< 1 mm	< 1 mm	< 5 mm	< 10 mm
Fine	1-2 mm	1-2 mm	5-10 mm	10-20 mm
Medium	2-5 mm	2-5 mm	10-20 mm	20-50 mm
Coarse	5-10 mm	5-10 mm	20-50 mm	50-100 mm
Very Coarse	> 10 mm	> 10 mm	> 50 mm	> 100 mm

* (1) includes angular and subangular blocky structure

* (2) includes columnar structure

Determine the structure of the given soil samples and complete the data chart

Materials: Samples of known soil structure, 8-10 samples of unknown soils, paper towel, weigh boats, magnifying glass, ruler/tape measure and a waste bucket.

Sample #	Size	Structure

Post-Lab Questions:

1. List at least three binding agents in soils:

2. Which soil samples are least desirable for producing vegetables? Why?

3. List any two practices that could be used to improve soil structure.

4. Which soil samples are most desirable for producing vegetables? Why?

Soil Texture By Feel Flow Chart

