SSC 107 - LABORATORY EXERCISE 5

Obtaining Undisturbed Soil Cores in the Field

Introduction

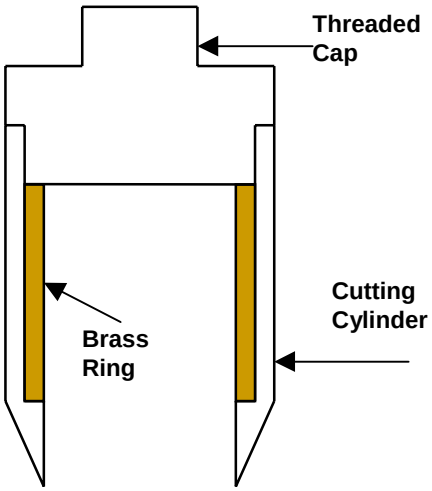
Undisturbed soil cores are more desirable than sieved samples for measuring some soil and soil-water properties because the original structure and pore configuration remains approximately in a natural state. This is especially true in the determination of bulk density, in gaseous diffusion experiments and in assays of soil-water characteristic curves at small matric heads.

Procedure

1. Prepare the area where the samples are to be taken by removing trash, roots, etc. Level and smooth the surface with a shovel. The soil should be in a relatively moist condition.

2. If the cores are to be used for the determination of soil-water characteristic curves, they should be removed at the same depths as other instruments such as tensiometers are installed. A surveying level or other method may be used to accurately measure the sampling depths. For this exercise, we will remove cores from near the soil surface.

3. Place a brass cylinder in the soil sampler. The sampler is similar to that shown in the accompanying diagram. Place the top driving ring above the aluminum cylinder and then place the cutting cylinder (containing aluminum cylinder) either on the soil or on the driving hammer depending upon the particular sampler used. Place the driving hammer on the cutting cylinder and drive the cylinder into the soil by dropping the hammer in steady, even drops. Care should be taken to keep the cylinder and hammer in a vertical position.



4. After the cylinder has been driven far enough into the soil so that the soil core has reached the top of the driving ring dig out the soil corer. Remove the aluminum cylinder from the cutting cylinder carefully. It is possible to sample several cores at one time.

5. Each student should take at least one soil core.

6. Trim the cores roughly leaving some soil on each end, and place in food containers for transportation to the laboratory. The cores are now ready for final trimming to obtain an exact soil cylinder of known volume.