

Introduction to SoilWeb™: Investigating the Soil Beneath You

Part 1: Local Soil Horizons and Soil Organic Matter

Directions:

1) Go to SoilWeb™ (<http://casoilresource.lawr.ucdavis.edu/soilweb/>) and select Google Maps Interface. Enter your zip code in the Zoom to Location field.

2) You will see a satellite image with soil types identified; in the right box, a map unit legend will give the acreage associated with each soil type that appears on type your map. From your legend, select the dominant soil by area fraction (greatest number of acres) that is not unspecified (e.g. don't choose "urban land;" choose "Eldean urban land").

Or, use the free SoilWeb™ app for your smartphone and choose Get my location; it will pull only the dominant soil for your entire zip code. You will see a generalized profile with the dominant soil name at top.

Write the name of the soil here:

3) A generalized soil profile will appear showing distinctions between soil horizons. Soil horizons mark transitions in composition from the lowermost regolith (parent rock) to the uppermost organic layer. These transitions can be seen by changes in color. Soil horizons are identified by capital O, A, B, C, R but may be subdivided into sub-horizons as noted with additional letters. Note that the uppermost organic horizon (O), where plant matter mixes with soil, is not shown in SoilWeb™. The O horizon is not present in cultivated landscapes. Similarly the R layer, or regolith/bedrock layer, is not shown.

- a) In the left panel below, diagram the soil profile and label the depths of changing horizons. Use a ruler to make sure that your horizons are drawn to scale. (e.g. 1:20, 1 cm on paper = 20 cm of soil)



Click on the soil name and you will see additional soil properties including profiles showing physical and chemical properties of your soil.

- b) Draw the percentage of organic matter in the right panel next to your diagram of the horizons. Line up depth increments so that the 2 diagrams can be compared. Label depths where transitions in organic matter occur.**
- c) Do changes in the percent organic matter concentrations correspond to soil horizons? Compare and contrast the two profiles.**
- d) Based on percentage of soil organic matter, which horizon is the most fertile? And how thick is this horizon?**

OR

If you don't see any transitions in soil organic matter in your soil, what does that mean about the health of your soil? (Discuss this with your neighbor and record an answer).

Part 2: Comparing soils and reflecting on sustainability

In small groups, you are tasked with comparing your soil profiles with one other location. You will report your comparison back to the class to improve our overall understanding of soil sustainability.

You should report:

- 1) Compare the erosion rate of each site in mm/year. To do this, locate your comparison site on the Continental Average and Cropland Average map and determine which rate is higher. The highest rate is the erosion rate for each location. Convert m/my into mm/y. Recall 1 meter (m) = 1000 mm
- 2) Describe similarities or differences in soil horizons present and their relative thicknesses.
- 3) Describe similarities or differences in the percentage of soil organic matter.
- 4) Given the erosion rate for each location, calculate and compare how quickly the fertile horizon of each site will be lost and describe differences in their present and future ability (or inability) to sustain crop growth.