

# Soil Pit Method

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## Introduction

Sampling soils can be done in many ways. The universal method, that is the best for the majority of analyses, is digging a soil pit. Soil pits allow you to examine intact profiles including important aspects such as soil color, structure, roots, and pores.

## Equipment

GPS  
Shovels (sharp shooter, round, square, etc.)  
Tarp  
Pickax or mattock  
Rock bar  
Soil knife  
Ziploc bags  
Measuring tape  
Most current NRCS Field Handbook for Describing Soils  
Golf tees or other horizon markers  
Notebook and pencil

## Procedure

1. Locate the sample site. Before digging, mark the location with a GPS using NAD 83 Zone 11.
2. Lay out a tarp close to the location of the pit.
3. Cut the outline of the pit (1 m<sup>2</sup>) with a shovel (sharp shooter works best) and take off the top layer of vegetation and set on the side of the tarp.
4. Begin excavating the soil keeping one side off limits to walking.
5. Continue digging as deep as required (predetermined depth or refusal).
6. Rock layers or hardpans can be cut through using the pickax or mattock while large rocks can be pried out with the rock bar.
7. If the pit goes deeper than 1 m widen the pit so that the bottom is easily accessible.
8. Once you have reached your predetermined depth or saprolite (refusal) scrape down the face that has had no aboveground disturbance for sampling.
9. Pin a measuring tape to the sampling face with the beginning of the tape at the top of the first mineral horizon (just under the litter layer).
10. Mark out the horizons using golf tees or other markers.
11. For each horizon document roots, pores, structure, horizon boundaries, and nodules or redox features first. Color, pH, rock fraction, carbonates, texture, and other features can be determined in the lab.
12. To determine the description take a soil knife and excavate a chunk of soil that includes intact peds from the wall surface and follow the guidelines in the NRCS handbook.
13. Once the pedon description is complete, take samples from each horizon or at predetermined depths beginning with the deepest layer and working to the surface.
14. After completing the pedon description and sampling, fill the pit as close to the original layers as possible. Top the area with the vegetation layer that was set aside at the beginning.

## References

Soukup, D.A., Drees, L.R., and W.C. Lynn. (2008) Sampling Soils for Mineralogical Methods. In *Methods of Soil Analysis- Part 5 Mineralogical Methods*.