Soil Health Sampling Guide

UVM Soil Health Research and Extension Center

Collecting soil health samples is similar to collecting soils for nutrient testing but with some additional steps to maintain the living biology. Once you have a sampling plan (see the "Sample Planning Guide, UVM-SHREC-FS-02-01"), follow these steps:

How to take a soil health sample:

To submit a sample that represents an entire field, we recommend following the directions in Figure 1. In summary, collect equally-spaced samples as you travel diagonally across the field in a randomly selected direction. If there are crop rows, make sure to travel diagonal to these to ensure representation within and between root zones of a present or previous crop. A systematic sampling approach that combines soil from across the field into a larger, representative sample is essential to assess the biology of soil because organisms naturally cluster together.

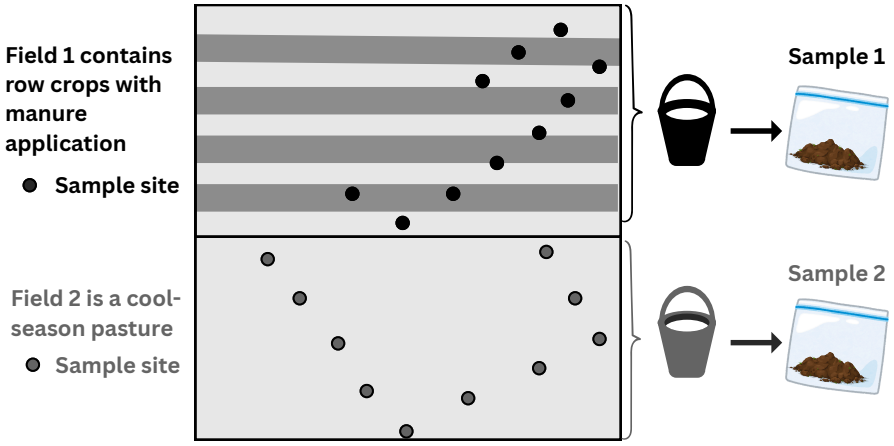

Figure 1. How to sample a field

1. Identify the different areas you want to sample based on the field's management, topography, and soil types. In Figure 1, fields 1 and 2 are under different crop & manure management conditions so a separate sample was submitted from each.
2. Multiple soil samples will be collected as you travel across the field and they will be combined into a single sample for submission. Mentally divide each sampling area and determine approximately how many paces it would take to ensure that the entirety of the field is represented.
3. Locate a random starting point (to remove bias) and head in a direction that is diagonal across the field. Field 1 and 2 show examples of different starting points. Collect equally-spaced samples as you move across the field and if the edge of the field is reached, turn right 90 degrees and continue. If you reach an edge again, make another 90-degree turn. If one of the sample sites seems unusual (e.g. a small, localized low spot or rock), move on to the next sample site.

Materials

1. Sampling tool: a clean garden trowel, shovel, or soil probe (e.g., Oakfield corer). Using a ruler, mark the tool with a permanent marker, tape, or scratch at 6 inches as a measure of depth for sampling
2. Sealable plastic sample bags (Ziploc, Whirl-Pak, etc.).
3. Permanent marker to label bag with sample name and date
4. Clean bucket for collecting and mixing samples before placing into the plastic bag
5. Cooler and ice pack
6. Clipboard, this Soil Health Sampling Guide, Submission Form, and a pen or pencil
7. *Optional*: Disposable gloves or clean garden gloves.

Figure 2. Supplies to bring to the field for soil health sampling

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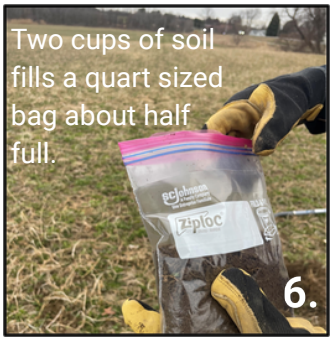
Methods

1. If present, gently brush away litter or plant residue from the soil surface.
2. Dig a small hole about 8 inches deep. Keep the soil nearby to put back when you're done.
3. **If using a shovel or trowel,** clean one vertical side of the hole to make it mostly flat. From that flat side, use the shovel to cut a vertical, rectangular slice of soil about 2 inches thick and 2 inches wide, using the method shown in the photos.
   a. Insert the shovel or trowel perpendicular to the ground to a 6-inch depth and pull it back out.
   b. Turn the shovel or trowel 90-degrees, insert it again, and pull it back out. Repeat one more time on the other side and gently remove the soil slice.
   c. Clean the soil slice on your shovel so that there is a consistent amount of soil at each depth and remove excess soil from the edges so the soil slice is 2 inches wide and 6 inches deep.
   d. Transfer the slice to a clean bucket and repeat this process for each sampling point across the field following your sampling pattern.
4. **If using a soil probe** (Only use a probe if you are NOT requesting aggregate stability analysis), insert the soil probe to a depth of 6 inches and remove the probe. Remove the soil core and place it in a clean bucket. Repeat this process for each sampling point across the field, following your sampling pattern.
5. Gently mix the soil samples in the bucket without destroying the clods.
6. Label the plastic bag with the sample name. Transfer about two cups of soil (a half-full quart bag) from the bucket to a well-sealed plastic bag.
7. Store the samples in a cooler with ice during sampling and transfer them to a refrigerator or cooler that will maintain a temperature between 32-40° F (not frozen) until sample submission (ideally within two days of sample collection).
8. Transport the soil sample on ice and deliver the sample to Jeffords Hall as soon as possible.
9. To coordinate drop-off, email **shrec@uvm.edu**. Keep the sample cool until delivered.
10. Use the Submission Form to submit samples to the SHREC Lab



Important sampling notes

- A soil probe can be used to collect a sample for any tests except for wet aggregate stability because the test requires intact soil aggregates with minimum disturbance.
- A different depth can be chosen as long as it is consistent and reported to the lab during sample submission. For example, soil carbon stock measurements often require 0-30cm sampling along with a bulk density sample.
- Please reach out to your local Extension Agent or the SHREC lab for more information on a sampling approach.

Sources

Cornell University Soil Health Laboratory. *Soil Health Manual Series Fact Sheet Number 16-01 Soil Health Sampling Protocols.* Cornell University School of Integrative Plant Sciences (https://bpb-us-e1.wpmucdn.com/blogs.cornell.edu/dist/7/9922/files/2021/11/01_CASH_SH_Series_Sampling_Protocols.pdf)

Soil Health Institute. *Soil Health Sampling*, Version 1.2 (2024) (https://soilhealthinstitute.org/app/uploads/2023/05/SOP_SoilSampling-v1.2.pdf)

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