

# Comprehensive Assessment of Soil Health

## Soil Sampling Protocol Field Sheet

For more detail please view the eight minute video available at [bit.ly/SoilHealthSampling](http://bit.ly/SoilHealthSampling)

### Materials list

- 1 large bucket for each sample and one for supplies
- 2 one-gallon freezer storage bag for each sample
- Clipboard and Submission Form ([bit.ly/CASHforms](http://bit.ly/CASHforms))
- Permanent marker and/or pen
- Straight shovel (sharpshooter or trenching spade style)
- Penetrometer (optional); [Contact lab](#) to borrow (see back)
- Cooler for in-field sample storage and transfer
- Ice pack(s) (optional); Only needed for hottest days



### Prior to sampling a field

- **ASK YOUR BEST QUESTION!** Clearly define sampling goals and number of necessary samples.
- **Define sampling goals;** i.e. to assess the current status of a management unit, to identify and troubleshoot constraints in a particular problem area, to compare between different areas on a farm, etc.
- **Determine the number of samples to be taken.** Decide whether one sample will adequately represent a management unit, or whether an area should be split to compare multiple units. Fields should be divided into sampling units with differences in soil type, management practices, crop growth, yield, etc.

### Soil sampling considerations

Soil Health sampling guidelines are similar to those of standard nutrient analysis. Samples should be taken when soils are at field capacity, before field operations, at a minimum 6" depth. Avoid irregular areas.

#### A. Sampling for General Purposes

- Sample uniform fields or areas where you want to assess general needs
- Baseline assessment before applying treatments
- Typical in-field soil sub-sample collection strategy

EXAMPLE A: Identify 10 locations within the area you would like to test that are representative of the field or plot. Borders and irregular areas should be avoided, unless a sample is specifically being collected from those areas to identify constraints.

#### B. Sampling for Troubleshooting

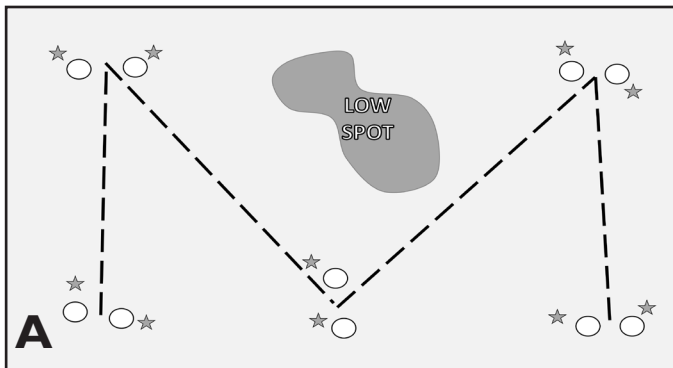
- Ideal for areas with uneven crop performance or for comparing zones, 'X' vs. 'Y', for example
- Targeted soil sampling from representative areas of each zone

EXAMPLE B: Identify multiple locations within the two or more areas you would like to test. You don't need to sample the entire field. With targeted sampling, focus on representative areas that will answer a particular question. For example, how is the 2nd year of no-till in zone X affecting the soil health status compared to the long-term plow-till in zone Y?

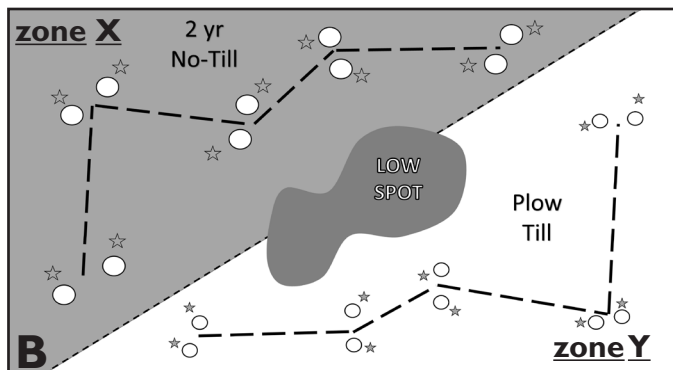
#### Sub-sampling and Penetrometer Locations:



Example A: General field sampling (1 sample)



Example B: Troubleshooting (2 or more separate samples)



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## Steps for soil sampling

From 10 representative locations in the sampling area:

- A. Remove surface debris.
- B. Use a drain spade to dig a small hole about 8" deep. From the side of the hole take a vertical, rectangular slice of soil 6" deep and about 2" thick.
- C1. Remove any extra soil to ensure that the sample is the same width at the top and bottom of the slice. You want a rectangular, 6" deep x 2" thick slice of soil, the width of the spade. It is important to collect the same amount of soil through the 6" sample profile so that it is not biased with more soil from the surface compared to the subsurface.
- C2. Place into clean pail.
- D. Optional - At each of the 10 subsample locations, [collect soil hardness](#) information with a penetrometer. Record maximum hardness (in psi) from the 0-6" and at the 6-18" depth ranges on the [Submission Form](#).
- E. Repeat steps A – D to collect the remainder of the subsamples. Mix thoroughly and transfer 3-6 cups of soil (depending on the [analysis package](#)) into a clearly labeled one-gallon re-closable freezer bag:

Basic Package - 3 cups  
Standard Package - 4 cups  
Extended Package - 6 cups

[Visit our website](#) for a complete description of each analysis package.

### A complete sample will consist of:

- a clearly labeled bag containing 3 to 6 cups of well mixed soil, **double bagged**.
- a completed **submission form with state and county entered** and penetrometer readings clearly recorded

## Soil sample storage requirements

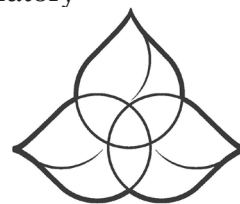
- Always keep samples out of direct sunlight, and if possible, store in a cooler while in the field.
- IMPORTANT: When collecting a large number of samples and if you have particular sampling considerations regarding storage or pre-processing, please contact [Soil Health Lab personnel](#) prior to sampling.

## Packaging and shipping requirements

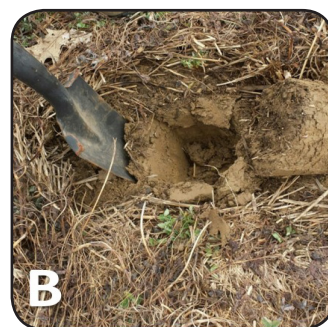
- Visit our website and download the submission form: [bit.ly/CASHforms](http://bit.ly/CASHforms). Save the submission form file for your records. Make sure to include your penetrometer measurements.
- For 1 sample, use a small USPS Flat Rate Box.
- For multiple samples, use a USPS Priority Mail Medium Flat Rate box (up to 6 samples per box).
- **Add packing material** in box to minimize sample movement and use ice packs on hottest summer days.

## Send samples & submission forms to:

**Cornell Soil Health Laboratory**  
G01 Bradfield Hall  
306 Tower Rd.  
Ithaca, NY 14853  
[soilhealth@cornell.edu](mailto:soilhealth@cornell.edu)  
607-227-6055



Further details on packaging and shipping requirements can be found at [bit.ly/SoilHealthShipping](http://bit.ly/SoilHealthShipping).



**ABOVE.** The steps of taking a soil health sample. NOTE: Keep samples out of the direct sunlight and keep as cool as possible during sampling. Store samples in a cold place after returning from the field and ship to Cornell as soon as possible.