

Soil Sampling Protocol

Materials needed for one sample:

- 2 5-gallon buckets/containers (one for soil, one for supplies)
- 1 zip-loc bag (large 1-gallon)
- 1 600 ml plastic beaker (3 cup capacity)
- Permanent marker and pen
- Trowel or shovel
- Penetrometer
- Grower and field information sheet (pages 20-21)
- Clipboard (if desired)

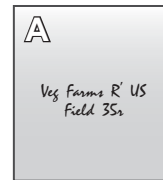


Steps for soil sampling:

1. Label the zip-loc bag with **field name/ID** and **date** (A).
2. **For each bulk sample (B)**: scrape off the surface debris (or the top 1-inch if field was left fallow) and use a trowel or shovel to mix the top 6-inches of soil and place approximately one cupful into the sample bucket. It is important to collect the same amount of soil from all soil depths so the sample is not biased with more soil from the top 2 inches compared to the bottom 2 inches especially since soil biological properties vary with depth. Instead of a trowel, a standard soil probe may be used but more cores will need to be collected to obtain the necessary amount of soil for analysis.
3. Once all the bulk samples have been collected (5 stops, 10 sub-samples, see page 19), **thoroughly mix** the sub-samples in the bucket and place at least **1.5 quarts** (6 full cups) of soil into the **labeled zip-loc bag** (C). The total sample volume submitted will be about 1.5 quarts (6 full cups). The remaining soil in the bucket can be discarded.
4. **Penetrometer readings**: each penetrometer reading is taken thru 2 depths (0-6 and 6-18 inches). For each depth, the highest/maximum measured penetrometer reading is recorded on the Grower and Field Information Sheet (see below). When finished, penetrometer readings will have been recorded at 10 locations in the field, each at 2 depths. For additional

information on measuring penetration resistance see page 26.

5. The sample should be kept out of the direct sun and placed in a cooler with ice packs. The microorganisms in the soil are very sensitive to heat.



A complete sample will consist of: a labeled bag containing 6 full cups of composited soil and a completed grower and field information sheet with penetrometer readings recorded at the bottom of the page.

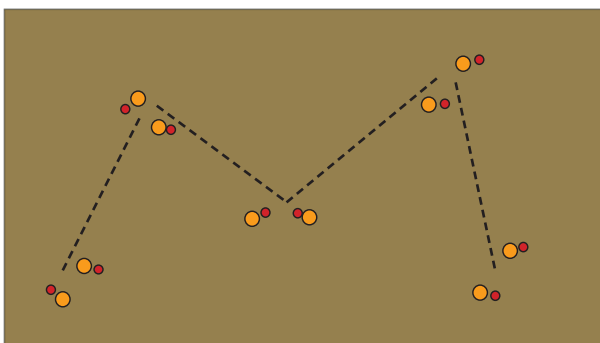
Field sampling design:

Prior to sampling a field it is important to determine whether the field should be divided up for multiple samples or one sample will accurately represent the entire field. The recommended guidelines are similar to sampling for nutrient analysis. Irregular areas in the field such as the low spot in *Example 2* should be avoided. Fields should be divided into sampling units when there are differences in:

- soil type,
- management practices and
- crop growth and yield.

At each of the five stops, collect two bulk soil samples at least 15 feet apart and take one penetrometer reading at two depths at each bulk sample location (see field diagrams below).

Example 1: Uniform field (1 sample)



Sample portions:

- Bulk soil sample (placed in bucket)
- Penetrometer reading (each at 2 depths)



Example 2: Uneven field - 2 soil types (2 samples)

