

Collecting Composite Soil Samples

A composite sample is made by combining several subsamples from the same area in a site and then sending a portion to the lab. Soil tests can be no better than the sample. Therefore, proper collection of the soil sample is extremely important.

Divide the site into areas with uniform conditions

If there is more than one soil type or native plant community class on the site, a separate composite sample should be collected for each of them. Soil survey maps or field observations of significant differences in topography, surface soil texture, thickness of topsoil, soil drainage, vegetation, or native plant community class can be helpful to determine uniform areas.

Collecting subsamples

Within each area, collect a subsample for every 1 to 4 acres. Spread the subsamples evenly across the area. The more variable the soil, the more sub samples should be combined per area sampled.

A soil probe provides the quickest method for collecting sub samples if there aren't too many rocks (see Photo 1). Scrape away the duff, but not the topsoil, and push the probe all the way down. Pull the probe out and put the top six inches in a clean bucket, go to the next sub sample spot, repeat the process and put the next sub sample into the same bucket. Please record the topsoil thickness of each sub sample and calculate the average for the composite sample.



Photo 1. Soil probe with a sample.

A shovel or spade is also an acceptable tool for sampling. A putty knife and a 12-inch long ruler or a similar sized board with a mark six inches from one end will help do this. Scrape away the duff, but not the topsoil, and dig a small hole a bit deeper than six inches. Then take a one to two inch thick slice of soil from the side of the hole. Make sure that a uniform amount of soil is taken, both in width and depth, along the shovel blade (see Photo 2).



Photo 2. Keep the width of the soil slice uniform along the entire 6 inches

Tip the shovel blade until horizontal while holding the slice on the blade in an undisturbed condition and lay the shovel on the ground. Clean off the surface of the soil if needed. Lay a ruler on the soil face, the end flush with the top of the soil (see Photo 3).



Photo 3. Preparing to trim the sample

Use the knife to scrape away the excess soil not covered by the ruler (see Photo 4). Measure six inches down from the soil surface and discard any soil beyond that distance (see Photo 5). Put the sample in a clean bucket, go to the next sub sample spot, and repeat the process adding that sub sample to the bucket. Please record the topsoil thickness of each sub sample and calculate the average for the composite sample.



Photo 4. Trim away soil no covered by the ruler.



Photo 5. Trimming is complete, put the sample in a bucket.

Mix the subsamples

When subsampling is completed for an area, mix the composite sample in the bucket thoroughly and place about one pint into a box or a zip-lock bag. If the samples are wet, they should be air dried before putting in a container and sent to the Laboratory. Fill out a soil sample information sheet for each composite sample. Complete the: a) "mail soil test report to" section (send it to your Region Silviculturist), b) the sample identification code, c) check the "Total organic matter" box in the "Check Tests Requested" section, and d) write the average topsoil thickness on the margin. Send the sample(s) and information sheet(s) to:

University of Minnesota
Soil Testing Laboratory
Room 135 Crops Research Building
1902 Dudley Ave
St. Paul, MN 55108-6089
Phone: 612 625-3101
FAX: 612 624-3420
email: soiltest@soils.umn.edu

Send a copy of the information form, and the test results, to the Region Silviculturist.