Spectrum Analytic Inc

Soil Sampling Guide

Maximizing productivity is a fact of life in agriculture. The demand for high yields, top quality and environmental stewardship will always be a driving factor. Unfortunately good yields and top quality don't happen automatically. However, there are tools available to guide you toward these goals in a reliable manner. Soil analysis is the first building block in a sound fertility program. *Soil reports should always be used with other information as a guide in arriving at fertilizer and lime recommendations which will help the grower attain their crop yield and quality goals.*

How to Take Soil Samples

Important: Accurate soil analysis with meaningful interpretation requires properly taken samples. Follow all directions carefully and correctly. Sampling technique presents the greatest chance for errors in results. Laboratory analytic work will not improve the accuracy of a sample that does not represent the area.

1. Select the Proper Equipment

Collect samples using chrome plated or stainless steel sampling tubes or augers. A clean spade or shovel can also be used. Avoid galvanized, bronze or brass tools. Use clean, plastic buckets. Do not use galvanized or rubber buckets, as they will contaminate the samples. (Figure 1)

2. When to Take Samples

Sampling can take place during any period of the year. However, it is best to sample a field at about the same time of year. Wait a minimum of thirty days to sample after applications of fertilizer, lime, or sulfur.

3. Sample Area

Samples must be representative of the area you are treating. Most often, sampling by soil color is an acceptable method for dividing large fields into "like" areas. County ASCS aerial photographs can be used as a guide. Areas that differ in slope, drainage, past treatment, etc. should be sampled separately (fig. 2). Sampling across dissimilar soil types is not recommended. And finally, the sample area should be large enough for special lime or fertilizer treatments.

Always remember to remove any surface debris prior to sampling.

Do Not Sample:

- Dead or back furrows.
- Fence rows, old or new.
- Old roadbeds, or near limestone gravel roads.
- Terrace channels.
- Wind breaks or snow fence lines.
- Turn-rows.
- Spill areas.
- Fertilizer bands including Anhydrous N.
- Unusual or abnormal spots.

4. Sample Depth

Refer to Table 1 on page 2 for the correct sampling depth. Sampling depth must remain consistent because many soils are stratified and variation in depth will introduce errors into the analytic results.

To test for soil stratification, sample through the soil profile, separately, 0" to 2", 2" to 4", 4" to 6", and 6" to 8". Remember to take the recommended number of cores per sample. The greater the difference in the analytic data between samples, the greater the degree of stratification.

5. Number of Cores and Acres per Sample

Various studies have shown that proper sampling requires at least 10 core per sample, and sometimes 15 or more cores, depending on the nature of the soil and the size of the area being sampled. A smaller number can introduce variability into the results from different sampling years. There is no rule for the number of acres to include in a single sample. This must depend on the local situation. However, the University of Illinois has long recommended that a single sample should represent no more than 5 acres. Very small sampling areas, such as residential landscape plants and some small gardens may use fewer cores per sample.

6. Preparing Samples for Shipment

Thoroughly mix the randomly taken core samples in a plastic bucket and remove a separate, well-mixed composite sample (½ to 1 pint) from the mixture. Place it into the lab's sample bag, filling it to the "line." New plastic sandwich bags can be substituted. Make sure to double bag these types of bags. All samples taken for Nitrogen analyses should be immediately air-dried, shipped early in the week, or shipped frozen.

Once the sample is in the bag, fold the top down to exclude air and roll it down to close and fold the tabs.

Write your sample ID designation (include grid sub sample identification where applicable) and your customer's name on the bag where requested.

7. Completing the Information Form

On the Information Form record the same sample, and sub-sample IDs, and the customer name with the address. In the indicated area include your business name and address. Complete all the remaining information as required.

8. Mailing the Sample

Spectrum provides the shipping containers (at a nominal fee) but other boxes may be used. A strong envelope may be used when shipping only a few samples.

Figure 1

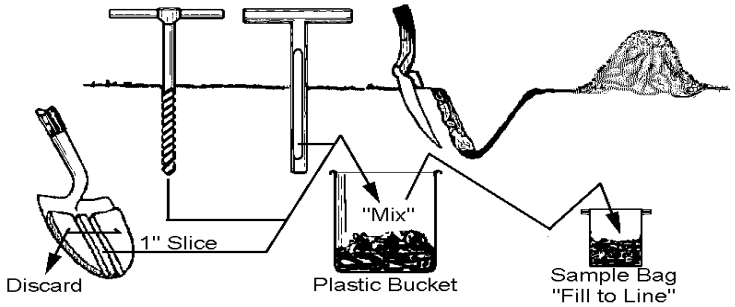

Figure 2

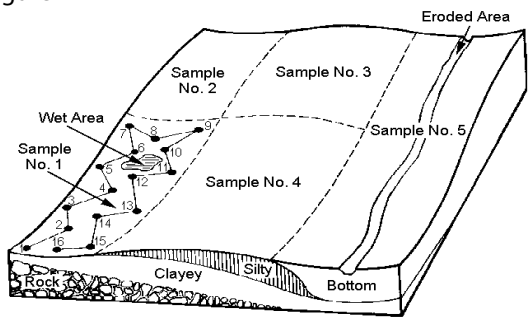

Figure 3: Trees

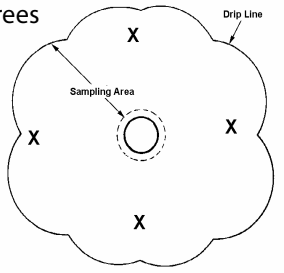

Figure 4: Sampling Fields with Banded Fertilizer

$$S = 8 \times \frac{\text{band spacing (inches)}}{12}$$

Where **S** = number of cores to take outside the band for each core taken in the band.

Table 1: Depth to Sample

Type of Sample	Sample Depth	Misc. Notes
Conventional Tillage	7″	Sampling depth must remain constant.
Strip/Band Fertilization (known)	7″	See Figure 4 for instructions.
Strip/Band Fertilization (unknown)	7″	Take 20+ random samples 90° to band rows.
Reduced Tillage or No-Till	2″ and 7″	2″ sample is for surface pH determinations.
Orchards and other trees	7″	Take samples inside the "drip line" (Figure 3)
Lawn/Turf	4″	Remove the sod piece from each core sample.
Pasture	4″	Remove the sod piece from each core sample.
Special Problem Solving	7″ and 36″	Take 7″ sample and 36″ sample from the "same hole"
Pre Sidedress Nitrogen Test	12″	Take samples when corn is 10″ to 12 " tall.
Soil Nitrogen Tests	12″ to 36″	Drier climate soils require the taking of deeper samples.
Soybean Cyst Nematode Samples	7″	Sample near planted row, in fringe of damaged areas.