



SOIL SAMPLING INSTRUCTIONS

Understanding your soil is the foundation of successful gardening, landscaping, and agriculture. A soil test offers valuable insight into nutrient and mineral levels, pH balance, organic matter content, and other chemical, physical, and biological characteristics that influence plant growth. However, the accuracy of these test results depends entirely on the quality of the soil sample submitted. A soil test is only as reliable as the sample collected. To obtain meaningful results, the sample must represent the average soil conditions across the area of interest—whether it is a field, garden, lawn, or flower bed.

Tools

1. A stainless steel soil-sampling probe, an auger, or a shovel/trowel (Figure 1)
2. Clean bucket
3. Plastic bags or water-proof lined paper bags
4. Permanent marker

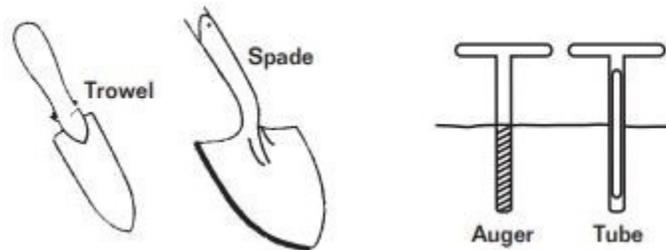


Figure 1. Sampling tools

Sample Collection

Use either a systematic or random sampling pattern to collect soil samples (Figure 2). The number of samples needed depends on both the size and variability of the sampling area—

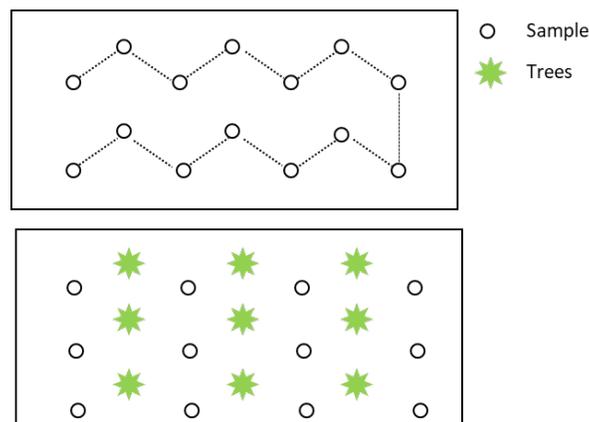


Figure 2. Sampling patten for fields, lawns, gardens, flowers beds, and trees/orchards

larger or more variable areas require more sampling points. In general, collecting more samples improves the accuracy of the composite sample.

As a rule of thumb, to create a representative composite sample:

- **Vegetable gardens and flower beds:**
Collect **10 to 15 subsamples** from the soil surface down to a depth of **6 inches or 8 inches (0–6" or 0–8")**.
- **Lawns:**
Collect **10 to 15 subsamples** from the soil surface to a depth of **2 inches or 3 inches (0–2" or 0–3")**.
- **Agricultural fields:**
Collect **10 to 15 subsamples** from the soil surface to a depth of **8 inches (0–8")**.

These subsamples should then be mixed thoroughly to form one composite sample that accurately represents the area being tested.

Submit a separate soil sample for any area that differs in crop growth, soil color, or fertilizer and amendment history. These differences often indicate distinct soil conditions that require individualized testing.

For example:

- A homeowner may submit **one sample from a vegetable garden, one from a flower bed, and one from a front lawn**.
- A farmer may submit **separate samples for each field, for different crops, or for areas showing unusually low or high productivity**.

Keep all samples from different areas **clearly separated** to avoid mixing soils with different characteristics.

When using a soil probe, insert it into the soil to the appropriate depth (0–6 inches or 0–8 inches, depending on the sampling guidelines for your area). Remove the soil core from the probe and place it into a clean bucket.

If using a tool such as a spade, dig a **V-shaped hole** to the appropriate sampling depth (6 inches or 8 inches). Then cut a **thin slice of soil**, approximately **1 inch thick**, from one side of the hole. For the subsample, retain a **1-inch-wide strip** taken from the **center of the spade** (Figure 3).

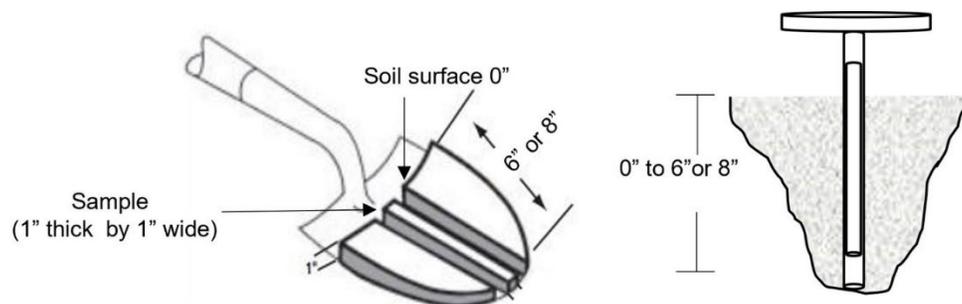


Figure 3. Sample Depth at 6 inches or 8

When using an auger for sampling, bore a hole to the desired sampling depth (6 inches or 8 inches) and then withdraw the auger. Replace the auger tip with a core sampler and lower it into the borehole to the sampling depth. Withdraw the tube-style core sampler and collect the soil core for your sample.

Once you have collected all the necessary subsamples from your defined area, the next step is to **combine them into one representative sample**, a process known as **compositing**.

Thoroughly mix all the subsamples in a clean bucket. This step helps average out any natural variation between sampling points, ensuring the final composite sample accurately reflects overall soil conditions. Break apart any large clumps of soil and remove any surface debris, such as crop residue, grass, wood chips, manure, roots, or rocks/gravel. Continue mixing until the soil is uniform and well-blended.

Take approximately **1 pound of the thoroughly mixed soil** from the bucket and place it into a **clean plastic bag** or a **waterproof, lined paper bag**. This portion represents the **final composite sample** to be submitted to the laboratory.

Using a permanent marker, clearly label the sample bag with your **name, sampling depth**, and a **sample identifier** such as *FIELD1, GARDEN1, LAWN, BACKYARD*, etc.

Next, fill out the appropriate **soil submittal form**:

- For **lawns, vegetable gardens, flower beds, trees, orchards**, and **reclamation sites**, use the **Horticulture Soil Submittal Form** ([Horticulture-Soil-Sample-Submittal-Form-26aug2024.pdf](#)).
- For **agricultural crops**, use the **Crop Soil Submittal Form** ([Crop-Soil-Sample-Submittal-Form-26aug2024.pdf](#)).

These forms are available at **CSU County Extension Offices** and on the **CSU Soil, Water and Plant Testing Laboratory webpage**: <https://agsci.colostate.edu/soiltestinglab/>

Be sure that the **sample name on the bag exactly matches** the **Sample ID** written on the submission form to ensure proper identification and processing.

Selecting a Soil Test

The soil testing packages offered by the SWPTL serve as valuable soil management tools for anyone seeking to diagnose and correct soil fertility problems, determine appropriate fertilizer needs, or improve overall soil health.

Our most popular test, S1, is a comprehensive soil analysis suitable for homeowners, farmers, ranchers, agronomists, landscape professionals, and environmental consultants. This test provides essential information on all key nutrients and minerals required for healthy crops and plant growth.

The Soil Texture test (S11) is another important assessment, as soil texture influences a wide range of soil properties, including water-holding capacity, nutrient retention, drainage, and organic matter decomposition. This test determines the percentage of sand, silt, and clay in the soil.

Submitting Samples

Colorado State University County Extension offices across the state provide **sample bags, sampling tools**, and **technical assistance** for collecting, preparing, and shipping soil samples, as well as helping with interpreting test results.

Soil samples may be **submitted in person** or **mailed** to the laboratory. When mailing samples, place the sample(s) and the completed submittal form into a **sturdy box or padded envelope**. Seal the package securely with packing tape and mail it to the address listed on the submittal form.

You will receive the **soil testing report** within **7 to 10 business days** after the laboratory receives your sample.

Dropping or Mailing Address:

Soil Water and Plant Testing Lab
Terra Building T 3-16
4789 National Western Drive
Denver, CO 80216

Payment

Payment is expected at the time of sample submission. Purchase orders are accepted for city offices, landscape companies, crop and environmental consultants, schools, and universities.

When samples are **mailed**, they must be accompanied by a **check or money order** made payable to **Colorado State University** for the total amount due. If samples are received without payment, laboratory personnel will attempt to contact the customer to obtain payment before processing. Samples will be held for **up to two weeks** while awaiting payment; after this time, they will be **discarded** if payment is not received.

If samples are **dropped off in person at the laboratory**, payment may be made by **credit or debit card**.

For questions regarding purchase orders, invoicing, or payment, contact the SWPTL at **soiltestinglab@colostate.edu** or by phone at **970-491-5061**.

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