

# Soil Sampling Pastures and Hayfields

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Adequate soil fertility in pastures and hayfields is key to maintaining productivity and optimizing profitability. Soil testing is the basis of well-designed fertilization and liming programs. In order to develop effective programs, soil samples must be collected in a manner that results in an accurate representation of each pasture or hayfield area. The objective of this publication is to provide guidelines that, when followed, result in representative soil samples.

**Sample pastures and hayfields in the spring or fall.** Soil samples can be collected at any time during the year, but collecting samples in either the spring or fall is ideal. More importantly, always soil sample a given pasture/hayfield at the same time of the year. This allows comparisons over time, permitting evaluation of long-term changes in soil fertility.

**Sample pastures and hayfields every two to three years.** In order to track changes over time, typical pastures and hayfields should be sampled every two to three years. Intensively managed hayfields with high yields that result in high levels of nutrient removal, such as alfalfa, should be sampled every year.

**Avoid sampling immediately following lime and/or fertilizer applications.** Sampling following lime, fertilizer, or manure application should be delayed for about 6 months.

**A single soil sample should not represent more than 20 acres.** Pastures or hayfields larger than 20 acres, or which exhibit considerable variability, should be subdivided based on landscape position, forage type, and productivity potential. In intensively managed grazing systems, every paddock should be sampled.

## Do not sample areas where animals congregate.

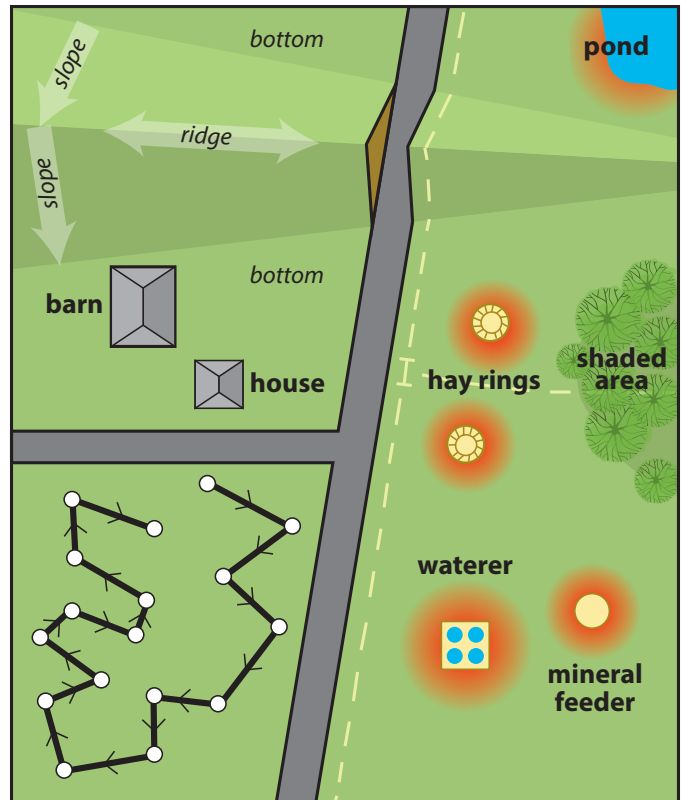
Avoid sampling near hay feeding areas, mineral feeders, feed bunks, shade trees, ponds, or waterers. Animals concentrate dung and urine in these spots, elevating soil nutrient concentrations. These areas are *not* representative of the pasture (Figure 1).

## Remove plant residues on the soil surface prior to sampling.

Scrape soil surface plant residues away prior to taking each soil core because these residues can inflate soil organic matter and nutrient concentration values.

## Do not take samples directly in manure pats and urine spots.

Do not sample within such spots, as organic matter and nutrient concentration values will be inflated and not representative of the pasture area. Move at least 3 inches away before taking a soil core.



**Figure 1.** Obtaining representative soil samples is key to accurate soil test results. Collect 15 to 20 cores per pasture or hayfield in a zigzag pattern. Make sure to avoid sampling areas where animals congregate. Larger pastures and hayfields should be subdivided based on landscape position, forage type, and productivity potential.

## Key Points

- Soil testing is key to optimizing liming and fertilization programs.
- Accurate soil test results are highly dependent on obtaining representative samples.
- Sample pastures and hayfields in the spring or fall.
- Sample pastures and hayfields every two to three years. Sample more frequently for intensively managed hayfields.
- Sample areas larger than 20 acres should be subdivided and sampled separately.
- Subdivide pastures based on landscape position, forage type, and productivity potential.
- Do *not* sample where animals congregate. Dung, urine, and rotting organic material increase nutrient concentrations in these areas and lower fertilizer recommendations.
- Always use a soil probe to sample pastures. The sampling depth should be 4-inches.
- Collect 15 to 20 cores per sample in a plastic bucket. Sampling should follow a random zig-zag pattern across the entire area to be represented by each sample.
- Crush and mix the cores thoroughly and fill sample container to the designated line.
- Submit samples along with completed paperwork to local extension office.



**Figure 2.** A soil probe should always be used to collect soil samples. Sampling depth for pastures and hayfields should be 4 inches.

**Always sample pastures and hayfields using a soil probe.** Although other tools can be utilized, soil probes are very easy to use, and result in the most uniform soil cores (Figure 2).

**Sampling depth should be 4 inches.** The 4-inch sampling depth represents the pasture or hayfield root zone where nutrient uptake occurs (Figure 2). If a new stand is being established in a tilled seedbed, soil should be sampled to the depth of primary tillage, usually 6 to 8 inches.

**Collect 15 to 20 cores randomly throughout each pasture/hayfield area.** Walking in zigzag pattern, collect a minimum of 15 to 20 cores. In pasture/hayfield areas that are larger and have more variation, collect more cores (Figure 1).

**Put cores in plastic bucket, hand crush, and mix thoroughly.** Cores should be placed in a clean, dry plastic bucket (never use a galvanized metal bucket) (Figure 2). Then, the soil cores should be hand crushed and mixed thoroughly. Crushing and mixing will result in a more representative sample sent to the soil test lab. Fill the properly labeled soil test box or bag to the designated line. If the soil is excessively wet, allow the sample to air dry and remix the sample before filling the soil test box/bag.

**Complete the soil test sample submission form and take samples to local extension office.** It is extremely important that samples are properly labeled and that the submission form is completed. Fertilizer and lime recommendations will be based not only on the soil test lab results, but also on the information provided on the submission form.

**Results will come to local extension office.** Results and recommendations will be emailed to your local extension office within one to two weeks. Local agents will send you a copy of the results and be available to help interpret soil testing data.

### Additional Resources:

- Find your local Extension Office in Kentucky  
<http://extension.ca.uky.edu/county>  
or (859) 257-4302.
- AGR-1: *Lime and Nutrient Recommendations*  
<http://www2.ca.uky.edu/agcomm/pubs/agr/agr1/agr1.pdf>
- AGR-103: *Fertilization of Cool-Season Grasses*  
<http://www2.ca.uky.edu/agcomm/pubs/agr/agr103/agr103.htm>
- WebSoilSurvey, USDA-NaturalResourceConservationService  
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>