Lesson 9: Soil Sampling & Interpreting Test Results Name _____

## Take a Soil Sample

**Objective:** To determine the proper technique for taking a soil sample.
**Activity Length:** Two class periods

**Materials and Equipment:**
- Soil tube, soil auger, or spade
- Plastic bucket
- Soil Sample Information sheet (attached) from University Extension

**Procedure:**

1. Scrape away any surface mat of grass or litter.

2. Each sample should include the top 7 inches of soil. (Note: Avoid taking samples in areas like borders, low spots, near trees, or near buildings.)

3. Place each sample in a clean bucket.

4. Take number of soil samples according to size of field or garden.

5. Mix samples of soil well to make a composite sample.

6. If samples are wet, air-dry before submitting soil samples.

7. Fill out the Soil Sample Information sheet with the aid of your instructor.

8. Enclose the information sheet and the soil sample in a special bag or study carton.

9. Send the package to the soil testing laboratory.

UNIVERSITY OF MISSOURI
Extension

**Soil & Plant Testing Laboratory**
23 Mumford Hall, MU
Columbia, MO 65211
Phone: (573) 882-0623 Fax: (573) 884-4288
SoilTestingServices@missouri.edu

**Delta Soil Testing Laboratory**
P.O. Box 160 (147 State Hwy. T)
Portageville, MO 63873
Phone: (573) 379-5431 Fax: (573) 379-3383
Drsll@missouri.edu

# Soil Sample Information for Field Crops

**Serial No.**

**Grower**_____ Phone (____) _____ Date ____/____/20___

Address_____ E-mail _____ Account No. Firm _____ (if applicable) Outlet _____ (if applicable)

City_____ State_____ ZIP _____ **Firm** _____ Phone (____) _____

County of Origin_____ ❑ Bill county or ❑ Bill firm Address_____ E-mail _____

Copy to FSA_____ Billing County Code_____ (if unknown, check with county extension office) City_____ State_____ ZIP _____

## Crop Codes and Common Yield Goals

(instructions on back of form)

| Code | Crop | Yield Goals |
|---|---|---|
| 1 | Alfalfa or alfalfa/grass establishment | 0 |
| 2 | Birdsfoot Trefoil/grass establishment | 0 |
| 3 | Clover or clover/grass establishment | 0 |
| 4 | Cool season grass establishment | 0 |
| 5 | Lespedeza/grass establishment | 0 |
| 6 | Overseeding legumes into grass | 0 |
| 7 | Warm season grass establishment | 0 |
| 8 | Wildlife Food Plot | 0 |
| 9 | Bermudagrass establishment | 0 |
| 10 | Alfalfa or alfalfa/grass hay | 3-7 ton/a |
| 11 | Alfalfa or alfalfa/grass pasture | 100-250 cow days/a |
| 12 | Birdsfoot trefoil/grass pasture | 100-200 cow days/a |
| 13 | Bluegrass pasture | 100-200 cow days/a |
| 14 | Bermudagrass hay | 2-6 tons/a |
| 15 | Bermudagrass pasture | 100-250 cow days/a |
| 16 | Clover or clover/grass hay | 2-5 tons/a |
| 17 | Clover or clover/grass pasture | 100-250 cow days/a |
| 18 | Cool season grass hay | 2-6 tons/a |
| 19 | Cool season grass pasture | 100-250 cow days/a |
| 20 | Cool season grass seed/hay or pasture residue | 0 |
| 21 | Cool season grass/stockpile fall growth | 0 |
| 22 | Lespedeza/grass hay | 1-4 tons/a |
| 23 | Lespedeza/grass pasture | 100-250 cow days/a |
| 24 | Sudangrass hay | 3-5 tons/a |
| 25 | Sudangrass pasture | 100-250 cow days/a |
| 26 | Warm season grass hay | 2-5 tons/a |
| 27 | Warm season grass pasture | 100-250 cow days/a |
| 100 | Barley | 40-80 bu/a |
| 101 | Buckwheat | 500-1,000 lbs/a |
| 102 | Cotton (lint) | 500-1500 lbs/a |
| 103 | Corn (grain) | 80-250 bu/a |
| 104 | Corn (silage) | 10-25 tons/a |
| 105 | Wheat/Soybean double crop* | 30-80 bu/a |
| 106 | Wheat/Sunflower double crop* | 30-80 bu/a |
| 107 | Wheat/Sorghum (grain) double crop* | 30-80 bu/a |
| 108 | Wheat/Sorghum (silage) double crop* | 30-80 bu/a |
| 109 | Oats | 50-100 bu/a |
| 110 | Popcorn | 1,500-8,000 lbs/a |
| 111 | Rice | 5000-10000 lbs/a |
| 112 | Rye | 30-70 bu/a |
| 113 | Sorghum (grain) | 4000-10000 lbs/a |
| 114 | Sorghum (silage) | 12-30 tons/a |
| 115 | Soybeans | 30-70 bu/a |
| 116 | Surgarbeets | 15-24 tons/a |
| 117 | Sunflowers | 1,200-2,500 lbs/a |
| 118 | Tobacco | 2,500-4,000 lbs/a |
| 119 | Wheat | 40-120 bu/a |
| 099 | Idle | 0 |
| 201 | Southern peas | 0 |
| 202 | Watermelon | 0 |

*Indicate yield goal for wheat only

**For variable rate application/precision ag only: (optional)**

Choose P and K build-up period ❑ 1 yr ❑ 2 yr ❑ 3 yr ❑ 4 yr

| Lab No. (lab use only) | Sample | Field / Sample ID (No more than 12 letters or numbers) | Acres | Irrigated (Y/N)? | Topography | Last Limed | Soil Region | Prior Crop Code | Cropping Options (1-4) 1 Crop Code | 1 Yield Goal | 2 Crop Code | 2 Yield Goal | 3 Crop Code | 3 Yield Goal | 4 Crop Code | 4 Yield Goal | Check (✔) Test(s) Desired: Regular | Zinc | Sulfur | Fe,Mn,Cu | Salts | Sodium | pHw | $NO_3$-N/Nitrate | $NO_3$-N&$NH_4$-N | Boron | Particle Size | $NO_3$ and $NH_4$ ONLY Sampling Depth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |



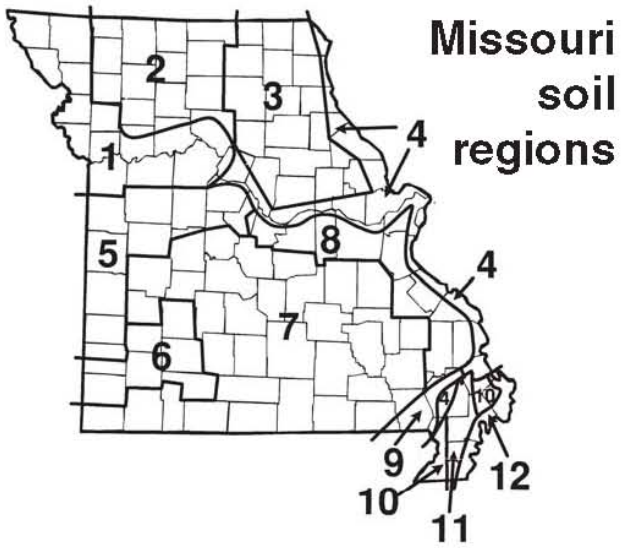


White Copy-Lab Yellow-File

# Instructions

Up to 8 soil samples from one grower may be entered on this form.

1. Fill in **Grower** information.
2. Fill in **Firm** information (if a firm is associated with the sample). **Firm and outlet numbers:** Use pre-assigned codes for soil samples being submitted directly to the soil testing lab by a dealer. Billing and payment will be made to the lab, not through a county extension office.
3. **County of origin** refers to the county where the sample was collected.
4. **Billing:** Check whether sample is to be billed to county or firm (samples submitted to county office should be billed to county).
5. Enter yes or no for **Copy to FSA** (Farm Service Agency).
6. **Billing county code:** A code is assigned to each county extension office.
7. On the bottom of the form in the **Field/Sample ID** area, enter any information that will help you identify this sample in your records.
8. Enter number of **acres** in the field where sample was taken.
9. Indicate whether the field was **irrigated**, Y or N.
10. **Topography:** Enter 1, 2, or 3.
    Level upland = 1
    Hilly upland = 2
    Bottomland = 3
11. **Last limed:** Enter 1, 2, 3, 4, or 5.
    Less than 1 year ago = 1
    1 to 5 years ago = 2
    more than 5 years ago = 3
    never = 4
    unknown = 5
12. Enter number of **Soil Region** where the soil sample was taken (refer to Missouri map at right).
13. Enter the **Prior Crop Code** (take crop code from the list on the front of the form).
14. Enter the **Crop Code** for any crop you intend to harvest (see front of form for crop codes).
15. Enter the **Yield Goal** for the crop (see front of form for yield goal ranges).
16. Enter codes and yield goals for other crops you may plant now or in in the future, regardless of sequence; e.g., crop codes entered as 103, 115, 105 are equivalent to 115, 103, 105.
17. Place a check beneath each soil test you are requesting. If you are unsure, begin with the regular test or consult your regional agronomy specialist. The regular test includes pHs, neutralizable acidity, phosphorus, potassium, calcium, magnesium, organic matter and cation exchange capacity (see soil tests below).




## Example

For a sample taken from a 10-acre field in northern Boone County on hilly land, limed 5 years ago, where soybeans were last planted and corn is to be planted with a goal of 150 bu/A, the field/sample ID would look like this:

| Sample | Field / Sample ID (No more than 12 letters or numbers) | Acres | Irrigated (Y/N)? | Topography | Last Limed | Soil Region | Prior Crop Code | Crop Code | Yield Goal |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 10-A NB | 10 | N | 2 | 2 | 3 | 115 | 103 | 150 |

## Soil tests

**Regular** — Select for N, P, K and lime recommendations

**Zinc (Zn)** **Sulfur (S)** **Boron (B)**

**Iron (Fe), Manganese (Mn), Copper (Cu)** — Usually diagnostic test with Zn and S

**Sodium (Na)** — Run with salts for problem soils generally due to irrigation water

**Salts (conductivity)** — Total soil salts for problem soils

**pHw** — Testing pH in weak salt (pHs) is part of the regular soil test. Testing pH in water slurry (pHw) may be requested.

**Nitrates ($NO_3$-N), ammonium ($NH_4$-N)** — For fine tuning nitrogen needs. Top and subsoil samples required. Also, consult with agronomist on timing of sampling and interpretation of results.

**Particle size** — Particle size analysis measures the percentage of sand, silt and clay in soil. This test is used to determine the texture of the soil.

## P and K build-up period for variable rate application

Standard University of Missouri recommendations use an 8-year build-up period for P and K fertilizer. Because of the additional application costs with variable rate application, you may want to choose a shorter build-up period. *In most cases, this option is unnecessary unless specifically recommended by an agronomist or an extension specialist.*