NRCS
Natural Resources Conservation Service

Soil Testing
Small Scale Solutions for your Farm

Do You Have Problems With:

- Nutrient deficiencies in crops
- Poor plant growth and response from applied fertilizers
- Hard to manage weeds
- Low crop yields
- Poor quality forages
- Irregular plant growth in your fields
- Managing manure or compost applications

Soil tests help to identify production problems related to nutrient deficiencies or imbalances. Above: Nitrogen deficiency in corn (photo: Ryan Stoffregen, Illinois). Below: Phosphorus deficiency in corn. Source: www.ipni.net

Soil Testing Can Help

Benefits of Soil Testing:

- Determines nutrient levels in the soil
- Determines pH levels (lime needs)
- Provides a decision making tool to determine what nutrients to apply and how much
- Potential for higher yielding crops
- Potential for higher quality crops
- More efficient fertilizer use

Costs:

Generally soil tests cost $7 to $10.00 per sample.

The costs of soil tests vary depending on:

1. Your state (some states offer free soil testing)
2. The lab that is used.
3. The items being tested for (the cost increases as more nutrients are being analyzed).

NOTE: Some state agencies and land grant universities provide free soil testing for the basic soil test items (pH, available phosphorus, potassium, calcium, and magnesium, and organic matter). Additional costs may be charged for testing for micronutrients. In other states, all soil testing is done by private labs and generally charge $7-$10 for the basic test. One soil test should be taken for each field, or for each 20 acres within a field. See example on page 3.

Soil Testing

How Often Should I Soil Test?

Generally, you should soil test every 3-5 years or more often if manure is applied or you are trying to make large nutrient or pH changes in the soil.

Soil sampling—Take 15-20 cores for one sample. Don't Guess—Soil Test.

When to soil test?

Sample fields the same time each year to achieve more accurate trends in the soil fertility.

- For cropland and vegetable production, it is best to sample in the fall of the year
- For pastures and perennial crops, it is best to sample during the late summer period

How to soil test?

1. **Find or select a soil testing lab.**
   Your local NRCS office or Extension office can provide information on labs that are available in your area

Sample depth for pastures is 4 inches

2. **Tools Needed:**
   - Clean plastic pail to collect soil samples.
   - Soil sampling tube, auger, or spade
   - Large paper or plastic bag to hold 15-20 soil cores or sub-samples (grocery bags work well)
   - Sample bag/box from the soil test lab

Soil Sampling Tube

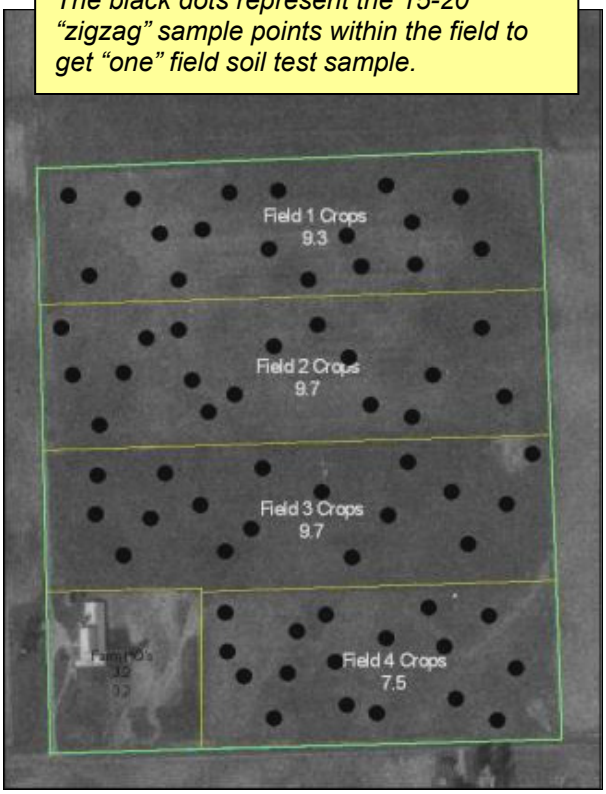
3. **Sampling Depth:**
   - For fields that are plowed or chisel plowed (8 inches deep)
   - For fields that are no-tilled consistently (8 inches deep for P and K and a sample 4 inches deep for pH)
   - Pasture fields are generally sampled to a depth of 4 inches

Sample depth for cropland is 6-8 inches

4. **Sampling areas to avoid:**
   - Farm lanes and field borders
   - Fertilizer bands in crop rows
   - Any area that is very different from the rest of the field: (severely eroded areas, sandy spots, wet areas)

Soil Testing

Collecting the Soil Sample:



The black dots represent the 15-20 "zigzag" sample points within the field to get "one" field soil test sample.

1. Divide the sampling areas by field and areas less than 20 acres within a field
2. Use a random zigzag pattern across the sampling field/area
3. Collect 15 to 20 individual samples at the required depth (usually 8 inches) to represent the **"one"** sample for the area and place the samples in the plastic pail
   - If using a soil auger or soil core tool to collect samples: simply put all the sub-samples in the plastic pail
   - If using a spade to collect samples: (1) remove a spade of soil to the desired depth and lay to the side, (2) remove a thin slice of soil to the desired depth and place in the plastic sample pail
4. After collecting and placing the 15-20 sub-samples in the plastic pail:
   - Pour the entire amount into a plastic or paper grocery bag (if taking more than one soil test) – then continue taking the next field sample
   - Take the sample from the grocery bag and pour it out on newspaper where it can air-dry (**do not add heat or microwave**)
   - When the soil is dry. Mix the entire sample then place the sample in the soil testing bag/box
   - Complete the sample information form for sample identification, field history, and planned crops

What Does a Soil Test Provide?

1. The pH level in your soil. This will tell you if you need to apply lime.
2. The plant available phosphorus and potassium levels. This will tell you if you have sufficient phosphorus and potassium levels or if you need to apply fertilizer to meet your crop needs and yield goals.
3. Magnesium and calcium levels in the soil.
4. If requested, the percent organic matter level in the soil .
5. If requested (depends on the soil testing lab), the soil test report will provide the recommended amounts of nitrogen, phosphorus, and potassium to apply in lbs/acre.

Fertilizer Application

Help is Available

NRCS Natural Resources Conservation Service

SMALL SCALE SOLUTIONS FOR YOUR FARM

Technical Help Is Available

Your local Natural Resources Conservation Service (NRCS) office has experienced conservationists that can assist you with developing a soil testing plan. They can also help you develop a Conservation Plan to solve other problems you have identified on your farm.

There is no charge for our assistance. Simply call your local office at the number listed below to set up an appointment and we will come to your farm.

You may also be eligible to receive financial assistance, through a state or federal program. Your NRCS office will explain any programs that are available so you can make the best decision for your operation. All NRCS programs and services are voluntary.

Helping People Help the Land

For More Information Contact the:

Natural Resources Conservation Service

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Warwick, RI 02886
(401) 828-1300
Web Address: www.ri.nrcs.usda.gov
E-mail Address: NRCSInfo@ri.usda.gov

NRCS accepts applications on a continuous basis throughout the year.

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January 2009