**How You Should Soil Test**

Most growers have someone else take soil samples on their land, but you can do it yourself. For directions, see the University of Wisconsin-Extension publication, *Sampling Soils for Testing* (A5200) from your county’s Extension office or online at [http://learningstore.wisc.edu/Sampling-Soils-for-Testing-P182543.pdf](http://learningstore.wisc.edu/Sampling-Soils-for-Testing-P182543.pdf) (the download is free). Routine laboratory analysis of soil samples costs $7.00 per sample at the University’s labs. Whether you or someone else collect and send soil samples to a lab, there are important things to know so you can get the most out of the results.

Fill out the soil information sheet completely. The information you provide to the lab is important in obtaining accurate and reliable fertilizer and lime recommendations. Step-by-step instructions are on the back of the information sheet. In this publication provides further explanation and some additional information.

**Accurately sample your fields.** Soil samples that are not representative of the field will result in inaccurate nutrient and lime recommendations. Generally, one soil sample should be collected for every five acres. A less intensive sampling frequency can be used for fields that had very high or extremely high P and K levels when last tested—provided that soil test results are no more than four years old (see table below). Each soil sample should be a mixture of at least ten soil cores from within the sampling area. Use a soil probe or auger to sample to the plow depth or at least 6 inches. Be sure to label each sample with your name, field ID, and sample ID number. Every field should have at least two soil samples. Crop strips should be sampled individually even when they are less than five acres in size—unless each strip has the same crop and management history.

Avoid fertilizer bands and plows in the field that soon very different from the majority of the field when soil sampling. Use a WDATCP certified soil testing lab. Certified labs are approved by the Wisconsin Dept. of Agriculture, Trade & Consumer Protection use approved analytical techniques and provide the University of Wisconsin recommendations that are based on field trial research conducted in Wisconsin. Use of WDATCP certified labs is required if the soil testing is being done for a nutrient management plan that needs to comply with the USDA-NRCS 590 Nutrient Management Standard. A current list of certified soil testing labs is available online at [http://wdatcp.wisc.edu/madison](http://wdatcp.wisc.edu/madison).

Make sure you receive the full results. Complete soil test reports include field-by-field information on the analysis results as well as crop specific fertilizer and lime recommendations for a four-year rotation. Some labs may only supply a fertilizer application plan. To get the full value from your soil tests and to use them to evaluate future cropping plans, you should get both the analysis results and the interpretation.

**Soil Test Results**

Your soil test result report will be a grouping of tables, numbers, and footnotes. At first this may look confusing, but the information can be divided into three main sections: nutrient recommendations, test interpretation, and laboratory analysis. Each section will be explained below. On the following page, actual results are illustrated and discussed. But first, a couple of things about what a soil test actually determines.

A soil test does indicate the plant availability of two important soil nutrients: phosphorus (P) and potassium (K). The result of these analyses is called the soil test level of the nutrients. A routine soil test does not directly indicate the amount of nitrogen (N) in the soil; however, the test does measure soil organic matter. Soil organic matter along with soil type information (texture, yield potential, irrigation), crop to be grown, tillage, and previous crop determine your N fertilizer recommendation.

**Method of Payment**

The "FERTILIZER CREDIT INFORMATION" section is very important for obtaining accurate recommendations. A previous legume crop such as alfalfa or soybean will reduce the amount of N, P, and K fertilizer needed for the next crop. If you apply manure, it will reduce the final N, P, and K fertilizer recommendations.

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**SOIL TEST REPORT**

The *Crop Nutrient Need* section is based on the numbers entered on your soil test information form. If you did not enter a number on the form but do have credits, you can subtract them from the *Crop Nutrient Need* to get the *Fertilizer Credit.*

**This is the most important information on the entire report!**

The *Nutrients to Apply* section tells you the actual pounds per acre of P<sub>2</sub>O<sub>5</sub>, K<sub>2</sub>O, and K<sub>2</sub>O to apply. This recommendation has been adjusted to reflect any fertilizer credits you indicated.

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**TEST INTERPRETATION**

Soil test interpretations are based on three variables: the actual soil test levels, the crop demand levels, and your soil type. The soil test report considers these variables to set optimum levels for P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O for your specific situation. The interpretation of your soil test levels relative to these optimum values is illustrated in the "Test Interpretation" section of the report.

The interpretations are based on extensive field trials conducted in Wisconsin that determined the response of crops to varying amounts of nitrogen, phosphorus (P), and potassium (K) relative to the needs of corn and small grain. These recommendations have NOT been adjusted for any fertilizer credits.

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**SPECIAL INFORMATION**

The "Nutrients to Apply" interpretation (right side of the page), is made in pounds of actual nitrogen, phosphorus (P<sub>2</sub>O<sub>5</sub>), and potassium (K<sub>2</sub>O) per acre. To determine the pounds of fertilizer material to apply, divide the actual pounds needed by the percent contained in the material. (Fertilizer analyses are written as percent of N - P<sub>2</sub>O<sub>5</sub> - K<sub>2</sub>O).

In this example, 185 lbs/a of actual N is recommended for the corn crop at a N:corn price ratio of 0.60. Reducing this recommendation by 60 lbs/a to reflect the mass N credit results in an adjusted N recommendation of 75 lbs/a. If using area (46-60) as a fertilizer, divide 75 lbs by 0.46 to get 163 lbs/a of area to apply.

The soil tested in this example is excessively high in both phosphorus (P) and potassium (K) relative to the needs of corn and small grain an average of 96 lbs/a or alfalfa. These levels are recommended for these cropping years. However, the test result values relative to established alfalfa is high and will affect a high amount of phosphorus (P) in the field. The pH for the whole rotation is adequate; subsequently, no lime is recommended.

Detailed information about nutrient-based recommendations on soil test results can be found in the University of Wisconsin-Wisconsin Extension publication, "Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin (A28089), which is available from your county’s Extension office or online at http://learningr.tçece.edu/Nutrient-Application-Guidelines-for-Field-Vegetable-and-Fruit-Crops-in-Wisconsin-P185C0.aspx (the download is free).

The "Additional Information" section contains other useful advice about your soil test results.

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**LABORATORY ANALYSIS**

This section shows the individual soil test results of each sample indicated on the soil information sheet you submitted. In this example, tests for soil pH, organic matter content (%), P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O, and soil-test pH for your particular sample are listed. In some cases, results at the location of a sample are listed. It is interesting to look at the range of results within a category. If at least three soil samples are submitted, the "Adjusted Averages" calculation eliminates any extremely high values (i.e., outliers).

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**LABORATORY ANALYSIS**

In this example, the only microelement tested was zinc. The sulfur result (Sulfur Available Index or SAI) is shown and interpreted as H (high). The others are left blank because they were not tested.

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