Autumn 2012

A & L Great Lakes Laboratories, Inc.

News Report

Quality Analyses for Informed Decisions®

Soil Testing After a Drought

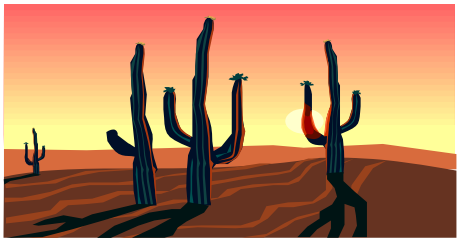
There has been a substantial amount of information and speculation published recently regarding how the drought of 2012 may affect soil test results of samples collected during the dry period. This article is an attempt to summarize these facts.

Soil pH: Water pH readings may be 0.1 to 0.6 pH units lower than expected. This is due to a slight increase in soluble salts in the soil solution that haven't leached into the soil profile. This condition, though, does not alter the buffer pH result so the amount of lime recommended for most samples will not be affected. An exception to this would be sandy soils where the water pH determines the lime recommendation. However, sandy soils are leached more easily so the amount of soluble salts in solution may be much lower than a heavier soil.

Potassium: Soil test levels for potassium may be lower than normal. When soils remain extremely dry for extended periods of time, the moisture that normally keeps the clay latticework open for potassium exchange retracts, capturing the available potassium from solution. This will show up as a reduction in the soil test level. Also, potassium is easily leached from crop residue following harvest. With little rainfall, this potassium reserve could remain in the tissue.

One caveat of this, though, is with inadequate moisture to produce normal yields, less potassium may be removed from the soil reserve.

Phosphorus: Soil test levels for phosphorus may be slightly lower than normal. The affect of the dry soil on phosphorus levels isn't as dramatic as potassium, but less moisture in the soil may lower the soil test readings. The same situation of reduced crop yields, though, may result in less phosphorus being removed from the soil.



Soil sampling technique: It is extremely difficult to sample dry soils. Many times the top one or two inches of the core are compressed enough that some of this material may spill out of the probe. In minimum tillage situations, this could have a dramatic affect on the soil test readings.

As of the publication date of this newsletter, hurricane Isaac has deposited a substantial amount of rainfall on much of the Midwest. Soils in the lower half of Illinois, Indiana, and Ohio may have enough time to equilibrate moisture levels prior to fall sampling so that some of the drought effects will be negligible. Reduced yields, though, will still be a remnant of decreased nutrients being removed from the soil. This year is one where soil sampling should occur in order to assess the affects of this unusual growing season.

Inside this issue:

The Basics of Lime Testing

The majority of our soils in the Great Lakes region require regular liming in order to maintain pH levels that are within the appropriate range to maximize crop growth and productivity. The quality and effectiveness of a liming material can vary tremendously depending on the source, composition, and physical properties of the material, so having a reliable lime analysis is critical to ensure that the proper type and quantity of liming material is used to get the desired effect.

Agricultural lime quality is usually measured by three characteristics:

1. Purity - commonly expressed as calcium carbonate equivalent (CCE)

2. Particle size – finer particles react more quickly to raise soil pH

3. Moisture – increases weight of the material without increasing effectiveness, essentially "diluting" the material

A number of materials can be used to increase the pH of the soil, but historically the most common material is ground limestone, commonly referred to as ag lime. Ag lime is finely ground rock containing high levels of calcium carbonate ($CaCO_3$) and magnesium carbonate ($MgCO_3$). It is actually the carbonate (CO_3^-) in lime that reacts with acidity (hydrogen) to increase soil pH.

Calcium and magnesium in lime, in addition to being essential plant nutrients, exchange with hydrogen (H^+) held on cation exchange sites, moving H^+ into soil solution where it can be neutralized by carbonate.

Particle size determines how quickly lime will dissolve and react in the soil. Generally, 40-50% of the particles in a good quality liming material will pass through a 60-mesh sieve. States in this region have different lime quality systems, with state-specific terminology and measurements.

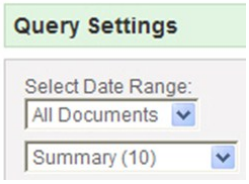
A & L Great Lake's Fact Sheet #6, *Adjusting Lime Rates*, provides details on how to make adjustments. A & L Great Lakes has also developed a spreadsheet which outlines various states' systems and helps adjust rates for a particular liming material. These useful tools are available from our website at www.algreatlakes.com.

Accessing Soil Sampling History Reports

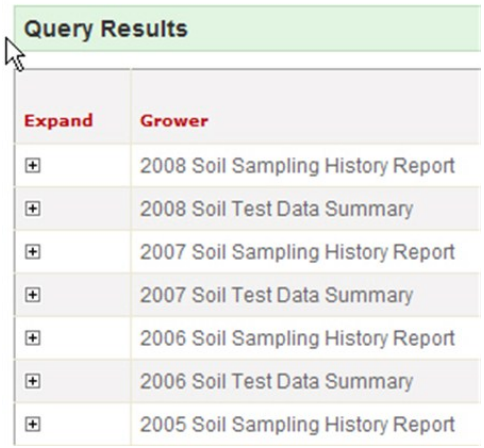
As the growing season is winding up thoughts begin to turn to soil sampling - at least we hope yours do. Many of our customers use their **Soil Sampling History Reports** to identify which customer fields need to be resampled. These reports are available on our ***eDocs*** online document and data management system.

Following is a brief overview of how to access your **Soil Sampling History Reports** and **Soil Test Data Summaries**:

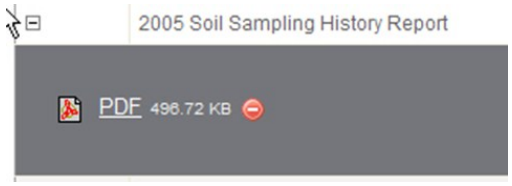
1. Log in to ***eDocs*** at http://docs.algreatlakes.com. Please contact us if you have forgotten your password.
2. Change your Query Settings to match the following example:



3. The Query Results will then show your available summary reports:



4. Click the + in the row containing the summary report you wish to view or download:



5. Click PDF (underlined) to view or download.

The **Soil Sampling History Report** helps identify or confirm which fields need to be resampled. Future summary reports will be posted to ***eDocs*** on an annual basis. We hope that these tools will be useful to you and make your sampling efforts more efficient.

Fall Management of Alfalfa

Fall is a critical time of year to manage alfalfa to ensure maximum productivity and stand longevity. Unlike annual crops such as corn and soybean, fall is when the alfalfa plant begins to store additional sugar, protein, and nutrient reserves in the crown and root system, which will provide protection from the cold winter weather and facilitate vigorous growth next spring. In a year such as this one, where hot and dry weather this summer was especially stressful to the plant, it is crucial to allow the alfalfa crop to prepare for the cold months ahead.

One of the most important management practices involves timely harvest. Final cuttings should be made early enough in the fall to allow the crop to regrow adequately and replenish necessary reserves before a killing frost, and should generally be completed by early to mid-September, depending on your location and local climate. More guidance on the exact timing can be obtained from state Extension publications or your local Extension agent. This is also a good time of year to assess the overall health and quality of an alfalfa crop, including evaluating stand density and root and crown health, allowing you to address any problems before they become serious.

Also critical for maintaining a successful alfalfa stand is managing the fertility of the crop. Fall is a good time of year to make fertilizer and lime applications. Low levels of nutrients, particularly potassium (K), can also lead to reduced stand health and vigor. In addition to the other essential functions of K in the plant, K plays an important role in the plants' ability to resist subfreezing temperatures, and low levels of K in the plant can lead to increased winterkill if conditions are favorable. In addition, maintaining a proper pH with liming is critical for a number of reasons, including maximizing the availability of other nutrients and ensuring successful nitrogen fixation. Since lime requires adequate soil moisture and time in order to affect soil pH, making lime applications in the fall allows the liming material time to react and can have a greater effect on next year's crop.

Careful management of your alfalfa crop this fall can mean a stronger, more vigorous crop next year. Therefore, taking some time to care for your alfalfa crop today can mean better results tomorrow and beyond.

Reference: Lewandowski, R. and M. Sulc. ***Plan Last Alfalfa Cutting****, Ohio CORN Newsletter 2012-28; available at http://corn.osu.edu/newsletters/2012/2012-28/plan-last-alfalfa-cutting (link verified 11 September 2012)*

A & L Great Lakes Laboratories, Inc.
3505 Conestoga Drive
Fort Wayne, IN 46808
Phone: 260-483-4759 ◦ Fax: 260-483-5274