The Soil Probe

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LOGAN LABS SOIL TESTING & CONSULTING SERVICES

What's Inside:

UPDATES FROM THE DIRECTOR

2012 marks the 10th anniversary of Logan Labs! I am very proud of the progress and growth we have accomplished in 10 years. It would not have been possible without all of our great friends and customers. We enjoy working with each and every one of you! It also would not have been possible without the great staff that I have been blessed with. We have a group of professional individuals. I don't think you could find better customer service anywhere!

Here's to you… friends, customers, and staff… for a great 10 years.

We are currently working on a new website. Our website has become our lifeline to you. We hope you will find the new site to be more informative and user friendly. We welcome any suggestions from you for our new site.

Our great friend and newsletter contributor, Bill McKibben, has completed his book. It was introduced at the Acres USA Conference in December 2011. It is titled "The Art of Balancing Soil Nutrients, A Practical Guide to Interpreting Soil Tests". It is a must read for all soil nutrition enthusiasts. Please contact the lab to get your copy.

Be sure to find us on Facebook. We have posted some great videos from the Soil Science Society of America. The videos are a brief explanation of how soil affects our everyday life.

Hope to see you at this year's trade show events. Have a great 2012.

SELECTING A SOIL TESTING LABORATORY by Susan Shaner

In a recent Acres USA issue I counted several ads listing "Soil Testing Services". How does anyone choose the right laboratory? Aren't they all the same? Should you send a sample to several different labs and average the results? How do you get the samples to lab and what is the turnaround time?

Whoa!! Some homework needs to be done here.

These are all questions that I hear on almost a daily basis. All labs are not the same. This does not mean that one laboratory is better than another. They all provide a different "menu" of services. It is important to find a lab that provides all of the services that you require. Are you just looking for a soil analysis or do you also need an irrigation water test or tissue analysis? Laboratories can also choose from a number of methods or "recipes" to obtain results. Which method would be best for your soil type or crop? "Presentation" of results can also vary greatly from one laboratory to another. It is important that you can read the report and make use of the information it provides. These are all questions that you should consider before choosing a laboratory.

Let's take a look at each of these items.

Menu of Services

Packages with various soil parameters are usually available plus some ala carte choices. This will vary greatly from one laboratory to another. I think we all agree now that there is a lot more to soil than pH. Therefore, look at what is included in the soil package you are requesting. Important parameters include pH, organic matter, exchange capacity, and base saturation. Also important are the major elements calcium, magnesium, potassium, sodium, and phosphorous. Important minor elements include sulfur, boron, iron, manganese, copper, zinc, and aluminum. A complete soil analysis including all of these parameters may cost a little more. More information will provide better insight of your fertility situation. If you base your decision on cost alone, you will probably get what you pay for. An inexpensive analysis may only include pH, phosphorous and potassium.

Methodology

Methodology is the most confusing area when comparing laboratories. There are several different methods for almost every parameter on a soil analysis. Laboratories choose methods that are best suited for the geographical area that they service. Most labs will offer different methods upon request to accommodate most customers; you will have to know what to request first. Sending the same sample to several labs for comparison will be quite confusing unless you do your homework to determine what methods are used. I have talked with several customers after they have submitted the same sample to different labs without understanding the differences. They have been very unhappy and disappointed with the outcome.

Let's look at a good example of different methods, for example, phosphorous. There are 9 phosphorous test methods that I am aware of. All of these methods were run on a specific soil sample and produced results anywhere from 10.5 parts per million to 656 parts per million. If you know how to interpret the results for each of these tests, you should come up with the same recommendation.

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If you do not have the correct threshold levels for the method provided, you could make a big mistake in interpretation.

Presentation of Data

What units of measure do you feel comfortable with? Do you prefer graphic results, high and low distinctions or an actual value found?

Soil reports come in all shapes and sizes. Some reports are very colorful and show your results in a graphic form. Various reports show values as low, adequate, or high. A number of reports show actual values found for each parameter. Reporting styles also vary regarding the reporting of desired levels, sufficiency levels and base saturation percentages. What style are you most comfortable with? A combination of these styles may be most helpful.

Units of measure can vary from parts per million, pounds per acre, pounds per 1000 square feet, or kilograms per hectare. It is very important that the laboratory is aware of your sampling depth if you will be receiving your results in a pound per acre or pound per 1000 square feet format. The sampling depth will affect the value reported. It is vital to be aware of units when comparing reports from different laboratories. You have to compare apples to apples. Looking at a phosphorous example again will explain this. A laboratory may report phosphorous at 50 ppm P and another may report it at 229 pounds per acre P_2O_5. These two results are the same; however the units are the difference.

Does the soil report offer a recommendation? Where did it come from? Some recommendations are generic computer recommendations that give a ballpark range for optimum levels of nutrients. These may or may not be for a specific geographical area. If you are growing a unique or exotic crop, then you may need some specific advice. Inquire about the services of an "independent" agronomist.

Logistics

How do you get your sample to the lab? Most labs will provide a soil sample bag or suggest a suitable alternative. Soils laboratories receive hundreds of samples each day. Be sure to acquire the appropriate paperwork from the laboratory to submit with your sample. Incomplete information will only delay the processing of your samples. Packing your samples for shipment is very important. Be sure to pack the samples tightly in a box. Pack newspaper or other packing material around the samples to keep them from bouncing around in the box. If samples can move around during shipment, they sometimes break open and can be destroyed. Resampling will add to your cost in time and money.

How long will this process take? Turnaround time in the whole soil testing process is imperative. Laboratories understand that your test results can be time sensitive. Don't hesitate to contact the lab if you have an emergency situation and need "Rush" service.

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To determine your approximate turnaround time, consider the time it takes to get the sample to the lab (2-3 days) and perform the analysis (3-4 days). Turnaround time varies from one lab to another and also varies by season. You may want to contact the lab to inquire about their current turnaround time.

How do you get your report? You do not want the report held up somewhere after you have already waited through shipping and testing procedures. Reports are usually e-mailed or made available on the internet on the same day the testing is completed. Be sure your correct e-mail address and/or a fax number is submitted with your samples to get your results ASAP.

This is just the tip of the iceberg when looking at differences in laboratories. Laboratory instrumentation is continually improving. More parameters can be detected in a short amount of time and detection limits keep getting smaller. More efficient and "green" procedures are always being investigated. *Embrace the advancements*. Visionaries, like Dr Albrecht are still being cited in soil analysis circles. If he was continuing his research today, I believe he would embrace the latest technology and tools available.

So, the question still looms… Which laboratory is best for you? Take the time to do your homework. It will be worth the investment and you will receive the value that you expect. Explore laboratory websites, call a lab and ask some questions, ask your friends about their experiences. Make sure you acquire the appropriate paperwork and instructions from the lab that you choose. When you have selected a laboratory that meets your needs and you are comfortable… stay there. Jumping from lab to lab will only discourage you on your quest to improving soil fertility.

DO I HAVE A SODIUM PROBLEM? By Bill McKibben

Recently I received a sand sample with the question "Should I use this sand as a top dress since the sodium is so high?" The data for the sand is shown in example 1. The pH is very high at 8. The sodium with a base saturation of 8.6% at first glance would seem to be very high. However this sand does not have a sodium problem, it has calcium, magnesium and potassium shortage. With an exchange capacity of less than one, a small addition of any cations will dramatically impact the balance and base saturation. The base saturation percentage is determined by first converting the actual pounds per acre of cations into milli-equivalents. This is done by dividing each of the cations by their conversion factor. Calcium, magnesium, potassium and sodium are converted into milli-equivalents by dividing the respective cations by 400, 240, 780 and 460. The milli-equivalents of all the cations are totaled and then each of the cations are divided by the total and multiplied by 100 to acquire the base saturation percentage. The conversion factors are based on the cations electrical charge and their atomic weight.

This sand is extremely clean totaling only 327 pounds per acre of exchangeable cations. The high pH of the sand would quickly adjust to the soil media that it was applied too, since there are very few cations in the sand to help buffer the pH. This sand would have very little positive nutritional impact on the media that it was applied too. Depending on the amount of sand added the only thing nutritionally that would happen would be the dilution of the existing nutrient levels. Diluting an already low exchange capacity soil is not beneficial.

This topdressing sand could be made better by adding a dry humic acid such as Lenardite along with mono-ammonium phosphate, rock phosphate, K-mag, potassium sulfate, gypsum and a moderately coarse lime. The addition of these products would depend on the current nutrient levels of the soils being top-dressed. A balanced compost product would also be a nice product to use. It could supply a source of nutrients as well as organic constituents. A trace element package consisting of iron, manganese, copper and zinc could be blended in as dry products or ideally impregnated on fertilizers being added to the mix. Impregnating minors onto fertilizers should be restricted to dry humic acids, nitrogen or potassium fertilizers. Phosphorus fertilizers could tie up most of the above trace elements.

Example 2 is saturated paste labeled Green 3. This sample is very similar to the topdressing sand. If you skip over the anion and cation data and look at the percentage of cations in solution one might think that there is a major sodium issue in this soil sample. Like the topdressing sand whatever type of soil this paste test was preformed on almost nothing was soluble in the sample. This is a good example why anyone using the paste test should start his or her review from the top down. Always look first at the cation and anion levels to see if threshold amounts are being reached. The solution balance means nothing if the nutrient levels are so low in solution that they create a nutrient deficiency.

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This green will require a complete program of soluble major and minor elements regardless what the standard test says. Since greens are generally very low exchange capacity soils applications of soluble products should be small and often. The goal is to meet threshold amounts on a continual basis. This cannot be done by slugging on large amounts of fertilizer at any one time. A large application of potassium fertilizer could end up competing with magnesium, creating a deficiency and a color issue in the turf grass. This could still happen if the potassium fertilizer is added with a dolomite lime. The solubility of lime drops to 5-10% as the pH approaches 7. The solubility of potassium chloride or potassium sulfate is nearly 100% regardless of the pH. Adding organic products to these low exchange capacity soils is a real key to creating stability and holding capacity for these soils.

In summary always concern yourself with the total level of each of the nutrients in low exchange capacity soils first. This is true for the standard test as well as the paste test. The balance of the cations takes a back seat to meeting threshold levels.

Logan Labs 2012 Calendar

CLOSED :

Memorial Day	May 28
Independence Day	July 4
Labor Day	September 3
Thanksgiving	November 22,23
Christmas	December 24,25
New Year's Eve	December 31
New Year's Day	January 1

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