

# The Turf Analysis

Winter 2012

Agronomic Information from *Spectrum Analytic Inc.*

## Happy Holidays!

As we close another year, we want to take this opportunity to say "Thank you" for your business in 2012. The Green Industry segment of our business continues to grow and we thank you for the confidence you have placed in our lab with your soil sample business.

Mother Nature once again gave us some surprises in the season this year. We started out with the warmest March on record; this is the earliest that I can remember mowing my yard. The summer continued with warm temperatures and adequate rainfall and then in June rainfall amounts go to almost nothing and most areas of the Midwest experienced a drought. We did not include any articles about drought and soil sampling or soil test levels because it would be after the fact and most people are likely tired of reading about it from all the earlier publications. Scott wrote an article about nitrogen that we hope will help you in your nitrogen management decisions next spring.

We have also included a basic article about taking soil samples. It is important to have a good technique in place for all your technicians to follow when taking soil samples. This will help insure better monitoring of the fertility program in future years. We get calls on a daily basis wondering why lawn soil test levels are so much different than previous samples. It has been quoted many times that the biggest error in soil testing is the taking of the sample itself. Instrumentation used today has excellent repeatability for the sample that is being analyzed.

Our on-line sample submittal continues to grow. If you have any ideas or suggestions to help make it more user friendly or any general improvements for our website, call us or send us an email.

Everyone at Spectrum Analytic wish you and your employees and families a Blessed and Merry Christmas. We hope that everyone enjoys the holidays together with friends and family and that everyone has safe travels. In the upcoming year we will be facing new challenges once again, take these challenges and convert them into an opportunity. May 2013 be a successful year for you and all your business ventures.

## Implications Of The 2012 Drought On Next Year's Turf N Program

Scott Anderson

Last year will be one of those years that we all want to forget, but some of us might see some lingering effects from the 2012 drought in 2013 when it comes to nitrogen. Let me start this discussion by saying that if your grass and ornamentals were under a well managed irrigation system, then most of what follows doesn't apply to you. However, if you are like me and not irrigating on a regular basis, then read on.

My home lawn is growing on heavy clay without regular irrigation and last summer I remember watching my lawn simply shrivel up and die in spots due to the drought. If I had been located a couple of miles north, it wouldn't have been so bad, but I missed most of the light rain that some nearby locations received. Now I am faced with re-seeding in spots and thinking about the fertilizer program. While I didn't fertilize especially heavy before the drought, my grass used very little N and I assume that there is now some carryover N still in the soil. The questions are, how much? And will that N be there next spring?

It would be great if we could give a simple formula that calculated the exact amount of N carryover based on N applied minus N removed and adjusted for things like soil organic matter, typical carbon residue, etc. etc., but agronomists can't really do that very accurately for most situations. The problem is that Mother Nature gets in the way. One of the biggest problems is that we cannot predict

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Spectrum Analytic participates in the National Proficiency Testing Program administered by the Soil and Plant Analysis Council. Spectrum Analytic also participates in several state quality control programs certified by the U.S.D.A. Spectrum Analytic uses soil testing methods published by the NCR-13 Committee of the U.S.D.A. Agricultural Research Service.

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## Spectrum Analytic Internet Library

Many of you ask Mike questions about agronomy when he makes his summer visits to your business. Did you know that the Spectrum Analytic website has a library articles link that you can use? And best of all the information is free. These are not articles that we have done research on, these are articles in which we have taken the basics of soil fertility and put them into articles that are easy to read

and understand. We understand that soil fertility may not be a big part of your business, but we want you to know that you have this resource at your disposal 24 hours a day, 7 days a week.

Here are just some of the articles that you'll find at <http://spectrumanalytic.com/doc/library/>

A General Guide To Soil Sampling  
Area Calculations For Fertilizer And Lime  
Artificial Media  
Boron  
Calcium  
Calcium And Magnesium Ratio  
Cation Exchange Capacity (CEC)  
Chlorine In Pool Water And Nearby Plants  
Chloride  
Common Liming Terms  
Copper And Manganese Soil Test Results  
Copper  
Fertilizer And Lime Applications  
Fertilizing Landscape Plants  
Gypsum  
How To Read A Spectrum Analytic Soil Test Report  
Interpreting Lawn And Garden Soil Test Results  
Iron  
Lead Levels In Soil  
Metal Concentrations In Natural Soils  
Magnesium  
Manganese  
Molybdenum  
Nitrogen  
The Nutrient Uptake Process  
Phosphorous  
Plant Nutrients In Municipal Leaves  
Potassium  
Sulfur  
Soil Aluminum And Soil Test Interpretation  
Soil pH And Buffer pH  
Soil pH Management  
Building Up And Drawing Down Soil P And K Levels  
State Ag Limestone Classification Based On Standards Of Fineness  
Why Labs Have Different Soil Test Results And Recommendations  
Zinc

## Implications Of The 2012 Drought On Next Year's Turf N Program

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the rain and snowfall between fall and spring. While most of us are hoping for a significant amount of precipitation to recharge the soil moisture, this moisture can complicate our planning for next seasons N fertilizer programs. If we get too little precipitation before the grass and other plants break dormancy we could have excess N in the soil, not to mention the likelihood of another season of drought stress. If we get excess precipitation between now and then, then we might have a considerable loss of soil N.

By the time the drought hit most areas, essentially all of the spring applied N was in the nitrate form ( $\text{NO}_3\text{-N}$ ). Nitrate is the form of N that is subject to the major loss factors of leaching and denitrification. If your soil is sandy, then leaching is a concern, while on clay soils denitrification is the more likely N-loss factor. If the turf was under severe drought stress then possibly little or no N was applied in the fall. But, whatever N was applied is by now in the nitrate form and subject to carryover or loss between now and spring.

Leaching is simply the downward movement of N (or any other nutrient) in a light/sandy soil and it can occur at any time there is excess rainfall. In most turf situations this leached N is not likely gone forever. It simply moves down in the soil profile and below the root zone of the grass or landscape plantings. As the soil dries out, it moves back up into the root zone of the grass and shrubs. Of course, the timing of this upward movement might not be ideal for the plants, but that N probably isn't lost forever.

Denitrification is a function of bacterial action in saturated soil where bacteria that require oxygen cannot get that oxygen from the soil atmosphere due to the excess

soil water. Some of these bacteria have the ability to rob the oxygen from the nitrate molecule. This results in the formation of gaseous N ( $\text{N}_2$ ), which escapes from the soil into the atmosphere and is lost forever. Since bacterial action is required for denitrification, it isn't as likely in cold soils, but if next spring is warm and wet, there could be significant N losses. With excess rainfall most loam or clay soils will experience some, or a lot of denitrification in the spring and early summer, thus negating any N carryover. How much denitrification might occur depends on the amount of time a soil is saturated and the soil temperature. How quickly the soil becomes saturated, and how long it stays saturated is affected by the amount of clay in the soil, the amount of soil compaction, and the amount of rainfall. All of this makes predicting the effect of carryover N on next year's corn yield essentially impossible to predict.

The best approach for most people may be to get a soil nitrate test next spring in order to better understand the implications and effects of last year's drought coupled with the following seasonal precipitation.

Rates of Denitrification in Saturated Soils		
Soil Temp.	Days Saturated	Loss Of Applied N
55 - 60 F	5	10%
	10	25%
75 - 80 F	3	60%
	5	75%
	7	85%
	9	95%

(From Shapiro, University Of Nebraska)

### UPS Authorized Return Service (ARS)

Looking for a no-hassle, fast and easy way to ship your samples to Spectrum Analytic? Try ARS. labels. The program is simple:

- Spectrum Analytic provides pre-addressed ARS. labels to apply to your sample boxes.
- Drop package at any UPS pickup point without any paper work required.
- Package is then sent to Spectrum Analytic.
- Customer is billed by Spectrum Analytic at a flat rate for each package.

We can customize your ARS labels to the poundage you normally send. If your most of your boxes weigh 20 pounds, simply request that weight when ordering. Whatever weight you need, we can supply it. Contact Spectrum Analytic today for specific details of the UPS ARS Program.

## How Many Cores to Pull for a Soil Sample

By Bill Urbanowicz

Taking a good soil sample is more than going to a yard of flower bed and picking up a handful of soil and sending it to the laboratory for analysis. That one handful of soil that is gathered would be a representative sample for that area, but what about an area that is 10 feet away or 30 feet away. Soils are three dimensional, we can see two dimensions but we cannot see that third dimension which is the depth. So we not only have variability over the landscape surface but we also have different types of soils as well as different nutrient levels at different soil depths.

To take a good soil sample, the first thing to have is a clean plastic bucket so that you do not contaminate the sample with something else. If you use a fertilizer bucket, you can have fertilizer residue that would influence the readings. If you use a metal galvanized bucket the galvanize materials will influence the zinc levels from the galvanizing process. Next you want a good soil probe; a good soil probe will be stainless steel to eliminate rust which can influence the iron reading during analysis. Mark the soil probe with either tape or a file so that you can maintain a constant sampling depth. The proper depth for turf sampling is 4 inches, be sure to remove the thatch and other plant material that may have accumulated at the soil surface.

Sampling is the next decision, for the first time you may want to take separate samples for the front yard and the back yard. The idea is to take a sufficient amount of cores to get a representative sample. It is recommended to take 10-15 cores per area for a representative sample walked in either a W or M pattern. One of the things that a higher number of cores will do is to help in future sampling. The same technician may not be the one that returns to that property in the next sampling rotation.

In Figure 1, you will see 20 cores are pulled by each technician, yet because of a difference in the M pattern only 8 of the cores are represented from what the first technician pulled. That leaves 12 cores that the first technician pulled that are from an entirely different area that what the second technician pulled. So here is a source of variability.

Let us look at different core possibilities. In this example (Figure 2) the technician pulled 5 and 20 cores. When 5 cores are taken, the average P level is 20 ppm. When you increase the number of cores to the suggested 20 per yard you can see the true average is actually 34 ppm. This is because you do not have the outliers of the 60 and 70 ppm. With this increase in core numbers, the puller

### Changing core locations may affect variability

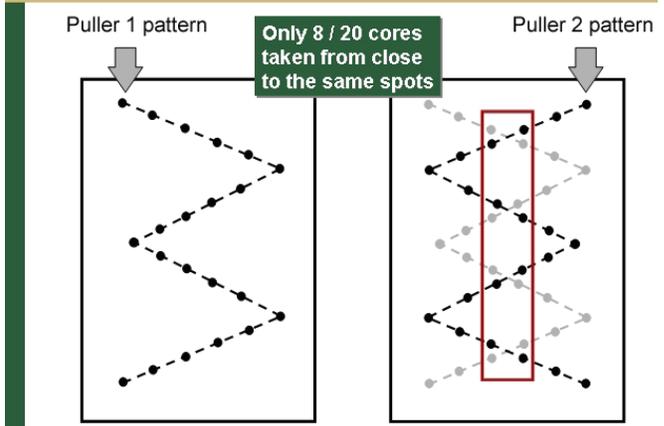


Figure 1

will have to do a thorough job of mixing and breaking the cores to get a representative sample. Then fill the soil sampling bag to the marked line.

By taking these steps there is a twofold benefit:

1. You will have a better representation of the area being sampled.
2. By filling the sample to the line on the bag you will be able to get more samples in the shipping box and thus decrease shipping costs per sample.

We hope this illustration gives the reader a clearer understanding of why we make the recommendations that we do in our guide to taking a soil sample.

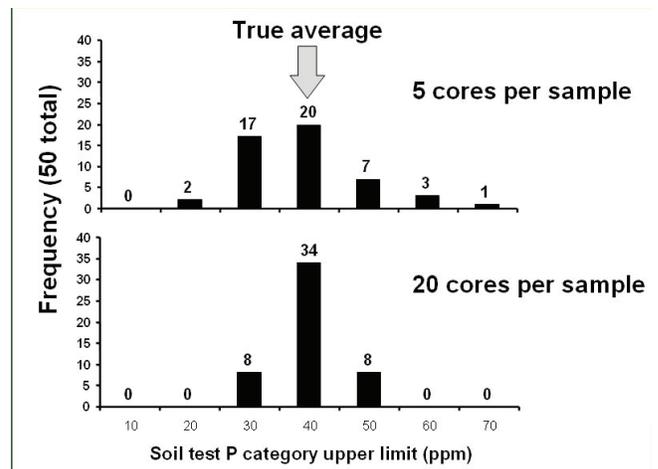


Figure 2