

AGVISE LABORATORIES

SUMMER/FALL 2014

NORTHERN NOTES

The year 2014 brought wet conditions and delayed planting in the northern region again. Many areas struggled to get seed in the ground and some areas ended up with acres that could not be seeded. We are all too familiar with "Prevent Plant" in the northern region and wishing Mother Nature would stop with the monsoons! In spite of the late start, many areas are expecting good crop yields. Spring wheat harvest will begin soon and expectations are for a very good crop. Corn and soybeans will need some heat the rest of the season to achieve average yields. Soil testing has already started in winter wheat areas and will start in many areas as spring wheat harvest gets rolling. We have a good stock of hydraulic and hand soil sampling equipment on hand. If you are in an area still struggling with wet soil conditions, be sure to try the heavy duty (HD) soil probe. The HD probe and tip have performed great in wet soil conditions. We have added a "slotted" version of the HD probe this year as well, following requests by several customers.

Many customers are now realizing the advantages of online sample submission. If you haven't taken a look at it yet, please give me a call and I will show you how easy it is and how much time it will save you every year. We have added "Video tutorials" to the AGVISOR program which will help you to quickly learn all the features. The only problem with these tutorials is you will probably get tired of hearing my monotone voice!

Have a great harvest season and be safe!



JOHN LEE
SOIL SCIENTIST/CCA

Fall Special on 24" Hydraulic Sampling System

AGVISE is offering special pricing on the first 30 soil sampling systems sold this fall. This special price is on our 24" electric/hydraulic soil sampling system. AGVISE will credit \$200 of free laboratory analysis to your account with the purchase of one \$2800.00 sampling system. This offer is good for the first 30 sampling units only sold this fall. This sampling system includes 2 stainless steel probe bodies and tips and also our HD (heavy duty) probe and tip. The HD probe is best for wet subsoils and frozen soils. You can view all of the components of this sampling system on our web site. Just go to www.agvise.com and click on "Products and Equipment" then "Hydraulic Sampling Equipment."

For customers who need to sample deeper (i.e. 40-42") for crops like sugarbeets, we now offer a telescoping cylinder as well. The telescoping cylinder is powered by an 8 hp Honda hydraulic pump system.

Wintex 2000

Wintex Agro, Denmark, (www.wintexagro.com) has been manufacturing hydraulic automated soil sampling equipment for 15 years in Europe. Their current topsoil sampler, the Wintex 1000 has been sold in the United States for over 10-years and has been a very successful, high-quality sampler. Currently about 40 units (Wintex 1000) have been purchased by AGVISE customers in the past 4 years. Agvise has a great relationship with the Wintex Agro U.S. distributor, Precision Technologies in Bancroft, IA.



The new Wintex 2000 unit is designed to collect a 2-depth soil sample (topsoil + subsoil) as deep as 24 inches, along with a topsoil sample and automatically

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Wintex 2000 continued...

separated the 24" core into a topsoil bucket and a subsoil bucket. The depths can be easily adjusted to various depth levels and can also be changed to a single, one-depth core if desired. The Wintex 2000 is designed to work in a very wide range of soil conditions from sands to clays, soft to compacted/hard soil and even frozen conditions. It can be mounted on either a 4-wheeler (ATV) or a side-by-side vehicle (UTV). Core collection is fast, with normal soil conditions it will collect and separate a core in about 10-12 seconds. When the soil is dry and hard it will take 13-15 seconds. There is a high speed hammer that pushes the probe into the soil under hard dry conditions.

The Wintex 2000 is very user-friendly, with its combination of integrated electronics, hydraulics and design. With the click of one button, the soil sampler will complete the sample collection process with speed, consistency and reliability.

This fall, Agvise will be evaluating the Wintex 2000 unit to see if performs under our conditions. Please contact John Lee in the Northwood, ND lab or Richard Jenny in the Benson, MN lab if you have questions on the Wintex 2000.

Sticky Wet Subsoils – Handy Way to add WD-40

Soil testing will be a challenge this fall as many subsoils will still be wet and sticky. WD-40 has been the probe lubricant of choice for 25 years to help get better quality soil samples and has been shown by research not to contaminate soil samples. Spraying WD-40 onto the soil probe is a messy process when using a cab mounted sampling system. I recently saw a simple device designed by a customer that is very handy for lubricating the soil probe with WD-40 between each core. This device (holster) also holds the soil probe so it is within easy reach all the time (see picture).



This device is a simple 2" PVC pipe with a cap glued on the bottom and a threaded fitting on the top with a plug that screws in when not in use. The pipe is fastened so that the open end is facing the sampler and the soil probe can be placed into the pipe, which is filled about half full with WD-40. Having the pipe in this position allows you to reach the probe easily each time you take a soil core and each time the soil probe is put back into the pipe/holster, it is soaked in WD-40 and ready to be used again. With the open end of the pipe close to the hole in the floor, any drops of WD-40 coming off the end of the probe will go down the hole, so there is very little mess. This may not be exactly what you need in your sampling rig, but it may give you an idea on how to build something that is right for your situation. How does the saying go “necessity is the mother of invention?”

“Video Tutorials” for AGVISOR!

We have added “Video Tutorials” to help guide you through the many features of the AGVISOR program. While our staff is always available to answer questions you have on the AGVISOR program, there are times you may need just a refresher on how some of the features in AGVISOR work. We tried to keep these videos very short and to the point. We hope you find them helpful and would appreciate any comments on how we can make them better.

AGVISOR New “Help Videos”

Submit Samples AGVISOR Plant Tissue Manure Nematode Billing

AGVISE LABORATORIES Submit Test History & Print Bar-Code Labels Growers & Fields Help

The following help options are available:

- View Our Help Videos
- Adding Growers and Fields to your AGVISOR
- Linking an FSA Map to a sample submitted online
- Submitting a Conventional sample online
- Submitting a Grid or Zone sample online
- Printing a Soil Order Form
- Printing a Soil Report as PDF with Google Chrome
- Printing a Soil Report as a PDF with IE
- Printing a Soil Report as a HTML with Google Chrome
- Printing a Soil Report as a HTML with IE
- Changing Crop Choice, Yield Goal or Fertilizer Guideline Type
- Creating your export format - Excel compat
- Exporting Soil Test Data as a CSV file - Excel Compat
- Customizing the N Factor for each crop choice
- Printing a Soil Test Summary

Soil Testing *Right Behind the Combine*

It is more the rule than the exception that soil sampling begins in mid-September instead of immediately following small grain harvest. However many growers miss an excellent window for soil testing by waiting too long. The reason for waiting is the fear that additional nitrogen will be made available through mineralization (decomposition of crop residue and organic matter). A review of research has shown that following small grain harvest, soil nitrate level changes very little and no sampling date adjustment should be made. Soil sampling right after small grain harvest is recommended and has numerous advantages:



DR. DAVE FRANZEN
NDSU Extension
Soil Specialist

1. Growers are more likely to actually use the test results to determine fall N fertilizer rates if the soil test results are in their hands soon enough to consider before fall fieldwork begins.
2. Soil testing prior to fall tillage will result in a more consistent 0-6" sample core, which provides the best sample for testing phosphorus, potassium, %OM, zinc and other nutrients tested on the topsoil.
3. Regrowth of volunteer grain will not hide available nitrogen. Early sampling will show the nitrate that will be available for next years crop.
4. Sampling right after harvest guarantees that fields will get tested and not missed due to weather problems that could happen later in the fall.

Liming Low pH Soil in North Dakota?

Liming is not a routine practice in North Dakota, like it is in many areas of the eastern Corn Belt. Most soils in North Dakota have a pH higher than 6.0, which do not require liming to raise the soil pH. Zone soil sampling, which breaks fields into several areas for variable rate nutrient application, is revealing areas of fields with very low pH, even in North Dakota.

We recently discovered an area of very low pH in a field just a few miles from our laboratory in

Northwood ND. We were looking for a low pH soil to use as a check soil in our laboratory when we found an area of this field had a topsoil pH of 4.9 and a subsoil pH less than 6.0! (Soils with a subsoil pH <7.0 are more likely to respond to lime application.) This low pH area in the field was about 20 acres, so it is certainly big enough to consider for a lime application. This spring we applied three rates of lime on this very acid soil as a demonstration project. We used beet lime as it is a very good, locally available lime source.

Three rates of lime were applied and tilled into the soil (see figure). Soybeans were planted very late on this field due to excessive rainfall this spring. Even though the lime had only been applied for two months, the soil pH had already increased on all of the treatments as shown in the table. This demonstration project will be a long term project as we measure the effects of the lime application on soil pH and on the growth of crops on these limed areas for several years.

Lime Demonstration Project 2014				
<ul style="list-style-type: none"> • Treatments <ul style="list-style-type: none"> • 2500 lb/a ENP (3250 lb/a beet lime) • 5000 lb/a ENP (6500 lb/a beet lime) Rate for most crops • 10,000 lb/a ENP(13000 lb/a beet lime) Rate for Alfalfa 				
Lime Material	Fineness Index	% ENP	% Moisture	ENP/ton
Beet Lime	100%	79%	30%	1093

Effect of Beet lime on Soil pH (so far!)	
Beet Lime Rate	Soil pH (July 15)
2500 lb/a ENP	5.3
5000 lb/a ENP	5.7
10000 lb/a ENP	6.6

Initial soil pH 4.8 - May 22, 2014

AGVISE Soil Fertility Seminars January 7-9, 2015

The dates and locations for our January 2015 Soil Fertility Seminars have been set. We are in the process of confirming speakers and topics for these meetings. A registration letter will be sent to AGVISE customers in early November so they can sign up first. A week or so later we will also send an email to everyone on our mailing list about registration for these seminars. If you received this newsletter you are on our mailing list, but we may not have your current email. If you want to be sure to receive an email announcing our seminars, please call Teresa at our Northwood office (701-587-6010)

**Tuesday, January 6, 2015 –
Prairies Edge Casino, Granite Falls, MN**

**Wednesday, January 7, 2015
– Watertown Events Center, Watertown, SD**

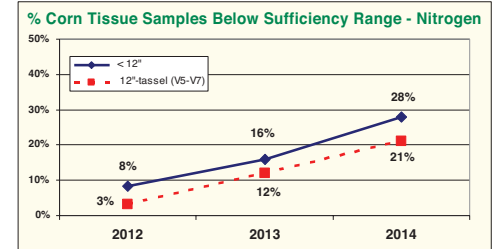
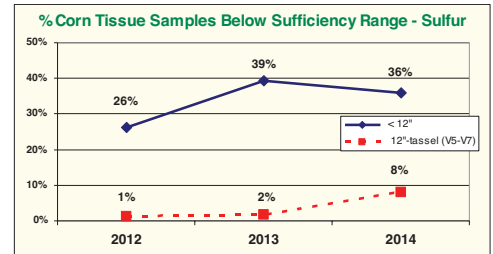
**Thursday, January 8, 2015 –
Alerus Center, Grand Forks, ND**

More Yellow Corn in 2014

Remember all the yellow corn in 2013? Southern Minnesota and eastern South Dakota may have had more yellow corn this year than 2013! Yellow corn, especially early (V4-V8), is usually an indication of poor nutrient uptake of nitrogen and/or sulfur. Record or near record rainfall from April through June (record of 22 inches of rain in Benson, MN) seriously delayed corn planting and stressed crop growth. With oxygen depleted, saturated soils, nutrient uptake was reduced. In contrast, the 2012 corn crop was seeded early and had great conditions for early growth. This year with excessive rainfall, soils lost nitrogen (nitrate-N) to leaching or denitrification or both! Sulfur also became an issue with leaching of sulfate sulfur below the root zone. Even if soils had sufficient nutrients, saturated conditions reduced nutrient uptake due to poor root growth resulting in stunted, yellow corn.

The two charts compare the percentage of corn tissue samples that tested below the sufficiency range for nitrogen and sulfur in 2012, 2013 and 2014 from our Benson, MN lab. Each chart is broken down into two growth stages: one for corn less than 12" tall (~V4) and one for corn greater than 12" tall (~V5-V7). In 2012, a very low percentage of corn tissue samples tested below the sufficiency range for nitrogen and somewhat fewer samples tested low in sulfur. In 2013 and 2014, a much large percentage of corn tissue samples tested below the sufficiency range for nitrogen and more samples tested low in sulfur as well.

With the excessive rainfall this region received this spring, it is no surprise that many tissue samples tested low in nitrogen and sulfur this spring. Tissue testing, along with soil analysis, was a useful tool this spring when trying to determine which nutrient deficiency may be causing the yellow corn.



Online Soil Sample Submission

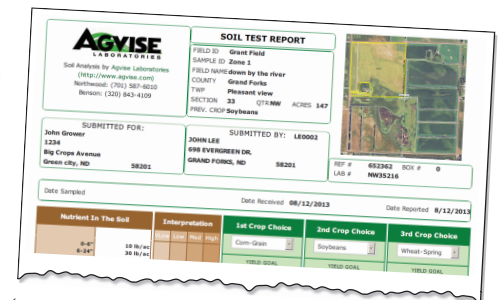
Many AGVISE customers have been submitting samples online for a few years now and others will try it for the first time this fall. When you submit your first sample online and realize that is the last time you have to enter that grower and field information (no more writing on forms), you will wonder why you waited.

One recent new feature of the online system is the ability to add the FSA map

to the grower and field information.

With the FSA map linked to the field ID, every time you submit the sample online, the FSA map with the field outlined will be printed on the AGVISOR soil report.

If you haven't started using the online sample system yet and have questions please call can call John Lee in the Northwood, ND lab (701-587-6010) or Richard Jenny in the Benson, MN lab



(320-843-4109). We can show you how it works and help you start doing online sample submission and make your job a lot easier!

Postcards and Posters Promote Soil Testing!

This is the eleventh year that AGVISE has provided customers with free "Post Card Mailers" to send to their growers to promote soil testing. These post cards are used to direct grower's attention to soil testing, right after wheat harvest begins. By



using these post cards, customers tell us they are able to start testing earlier and they end up soil testing more fields for their growers. We will customize the message on your post cards so you can tell the growers exactly what you want! Here is an example of what one customer had us print on his post cards last year: "Give our Agronomy Staff a call today to sign up for soil testing (320-123-4567). Soil testing is the first step towards a profitable crop in 2015!"

Once you receive your post cards with the customized message, all you have to do is write the growers name and address on the post card, add a stamp and put them in the mail. These post cards also fit into most statement envelopes so you can include them with the statements if you want. If you want us to personalize some post cards to send to your growers, please call Judy Engen at our Northwood office. She will ask what you want printed on your post card and how many post cards you want us to send you. If you have any questions on the post cards, please call John Lee or Richard Jenny.

Don't forget to request our colorful poster which promotes soil testing as well!

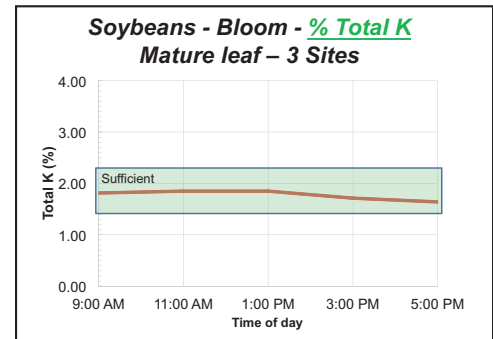
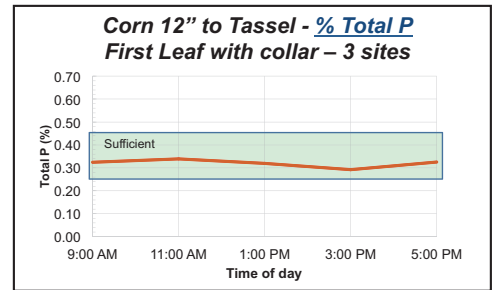
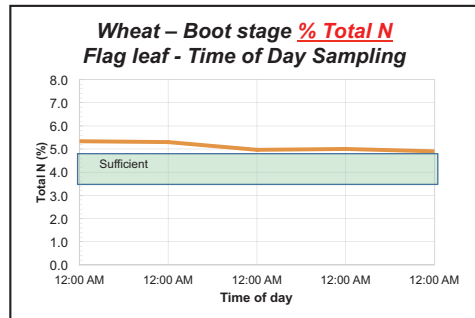
Is There a “Best” Time of Day to Collect Plant Tissue Samples?

Plant tissue analysis is a tool which can be used along with soil analysis to help troubleshoot potential plant nutrient issues. As agronomists increase their use of tissue analysis, our staff has received many questions. One common question has been “Is there a best time of day to collect tissue samples?”

You would think there would be a lot of research on this simple question, but several searches on the internet found little if any information on this topic. During my searches, I was surprised at how much information I did find on nutrient management for marijuana, weed, grass and ganja! I guess this information was a higher priority than research on crops that feed the world.

To provide some basic information on this question, AGVISE conducted a demonstration project to determine if the nutrient levels in plant tissue samples changed significantly if the samples were collected at different times of the day. For this project we collected tissue samples (in triplicate) at 9AM, 11AM, 1PM, 3PM and 5PM.

We collected tissue samples from spring wheat, soybeans and corn at various growth stages. In the figures you can see three examples of the nutrient levels at different times of day for various crops and stages of growth. The nutrient test levels did not change significantly if the samples were taken in the morning or in the afternoon. Any trends we did see were usually less than 5-10% differences through the day. When you consider that acceptable variability in laboratory analysis alone is about 5-10%, the change in nutrient levels observed in plant tissue samples throughout the day was not significant. We also had one day when the temperature was in the high 90s, which did not appear to effect the nutrient levels either. So the short answer to the question is you can collect tissue samples any time of day and get accurate test results. Please remember that to get the most useful information, always collect good and bad tissue samples along with good and bad soil samples when trouble shooting issues in the field. We will be showing a lot more data from this demonstration project at our seminars in January.



One Million soil samples submitted online! (Win \$500!)

Online sample submission has been a great thing for AGVISE customers. They save time, eliminate paper forms and eliminate errors in spelling etc. etc. In only 3 years, almost 1 million samples have been submitted online to AGVISE. We will hit the 1,000,000 online samples submitted sometime this fall and the customer who submits that sample will receive \$500. When the online sample with reference number 1,000,000 is received at our lab, we will give the customer a call so he can celebrate! We are still trying to figure out where we can get one of those big checks like the Publishers Clearing House winners get! Hope you are the lucky one!

President's Corner continued...

legume crops. Do you just apply the total nitrogen need of the crop or do you tweak the application rate based on expected contribution from the legume, soil type or other factors? It has been said the “Holy Grail” of soil testing would be to develop a rapid and inexpensive test that predicts nitrogen mineralization from the soil for the growing season. In the past few years, a few nitrogen mineralization tests have been explored by researchers, but none have been adopted in this region.

Currently, the “Solvita” test has been receiving attention as a biological test to be used in addition to the soil nitrate test to adjust nitrogen fertilizer guidelines. AGVISE does offer the Solvita test, but at this time, we do not have the much needed research to have confidence in using the Solvita test to adjust nitrogen fertilizer guidelines based on the soil nitrate test. Until research proves that nitrogen fertilizer guidelines are better when we adjust them with tests like the Solvita test, we need to keep using the tried and true soil nitrate test in areas where it has been proven. In the mean time, we will keep searching for that “Holy Grail,” and evaluating new tests as they are developed and tested by the research community.

AGVISE

LABORATORIES

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PRESIDENT'S CORNER

AGVISE started testing soil in an old implement building in Northwood, ND in the spring of 1977. It is interesting to follow the changes in soil testing over the past 37 years. For many years the main focus of soil testing in our region was to measure the amount of nitrate nitrogen remaining in the soil. The principle crops grown in the northern region of that time were wheat, barley, sugar beets, dry beans, and sunflowers. Of course we had many acres of planned summer fallow in the 70s. All of these crops, with the exception of beets, left an unpredictable amount of nitrogen in soil. All the intended crops to be grown had a specific need for nitrogen. Once a soil test was done, a field going into wheat with a 55 bu/a goal, could need a nitrogen fertilizer application ranging from 0 to 100 lb/a because the nitrogen soil test from fallow fields could range from as little as 40 lb/a to over 200 lb/a.

Over time, as corn and soybeans were introduced in our region, the focus on soil testing has changed. Soybean is a legume and fixes its own nitrogen so nitrogen fertilizer is not usually applied. Soybeans also remove most the nitrate nitrogen from the soil before they begin to nodulate, so the amount of nitrate nitrogen remaining in the soil after harvest is somewhat predictable. Corn and soybeans have higher potassium and phosphorus removal rates than the traditional crops we grew in the 70s and the yields we produce now are obviously much higher! Grid and zone testing have shown us that the levels of these nutrients can vary greatly across a field. While testing for nitrate nitrogen in the fall is still a driving force for soil testing in the northern region, we do see more emphasis on zone and grid testing P, K, Zn, pH, %OM where corn and soybean rotation are now common.

The hot topic in the soil testing industry right now seems to be how we can improve the nitrogen fertilizer guidelines following



BOB DEUTSCH
PRESIDENT
SOIL SCIENTIST/CCA

SOUTHERN TRENDS

Yellow corn was again as common this year as it was in early summer of 2013. This year we experienced delayed planting due to cold temps and generally wet/saturated soil conditions from April through June. All these factors have contributed to poor crop growth, root development and plant nutrient uptake. There may be ample nutrients in the soil, but plants struggle to grow and extract nutrients under these conditions (...STRESS...) Yellow corn can be an indicator of poor uptake of ether nitrogen, sulfur or just extended water logged conditions and poor rooting.

Early summer topsoil grid sampling continues to increase. Early summer sampling has more than doubled since 2009 and even with the wet soil conditions this year, early summer sampling increased. More samplers are using the Wintex1000 automated hydraulic topsoil sampler than ever before. The Wintex 1000 takes all the back breaking labor out of collecting topsoil samples, speeds up grid sampling and improves depth control consistency. The Wintex Agro company recently released two new models of their automated sampling equipment. We will see these new models in action for the first time this summer. The new topsoil unit (Wintex 1000S) should work better in hard dry soil conditions with the addition of a high speed hammer. The Wintex 2000 two depth sampler (topsoil + subsoil) is a first of its kind sampler for ATV's. We are looking forward to evaluating how these units work under the extreme soil conditions we have in this region.



RICHARD JENNY
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