

Soil Sampling and North Dakota One-Call Notification System

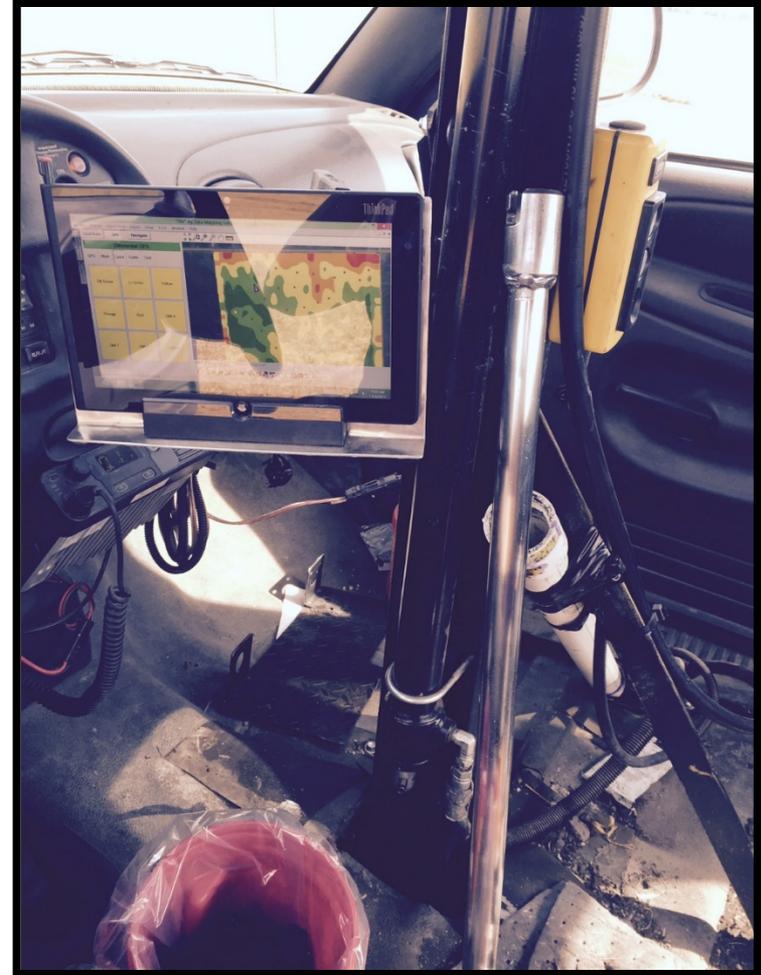
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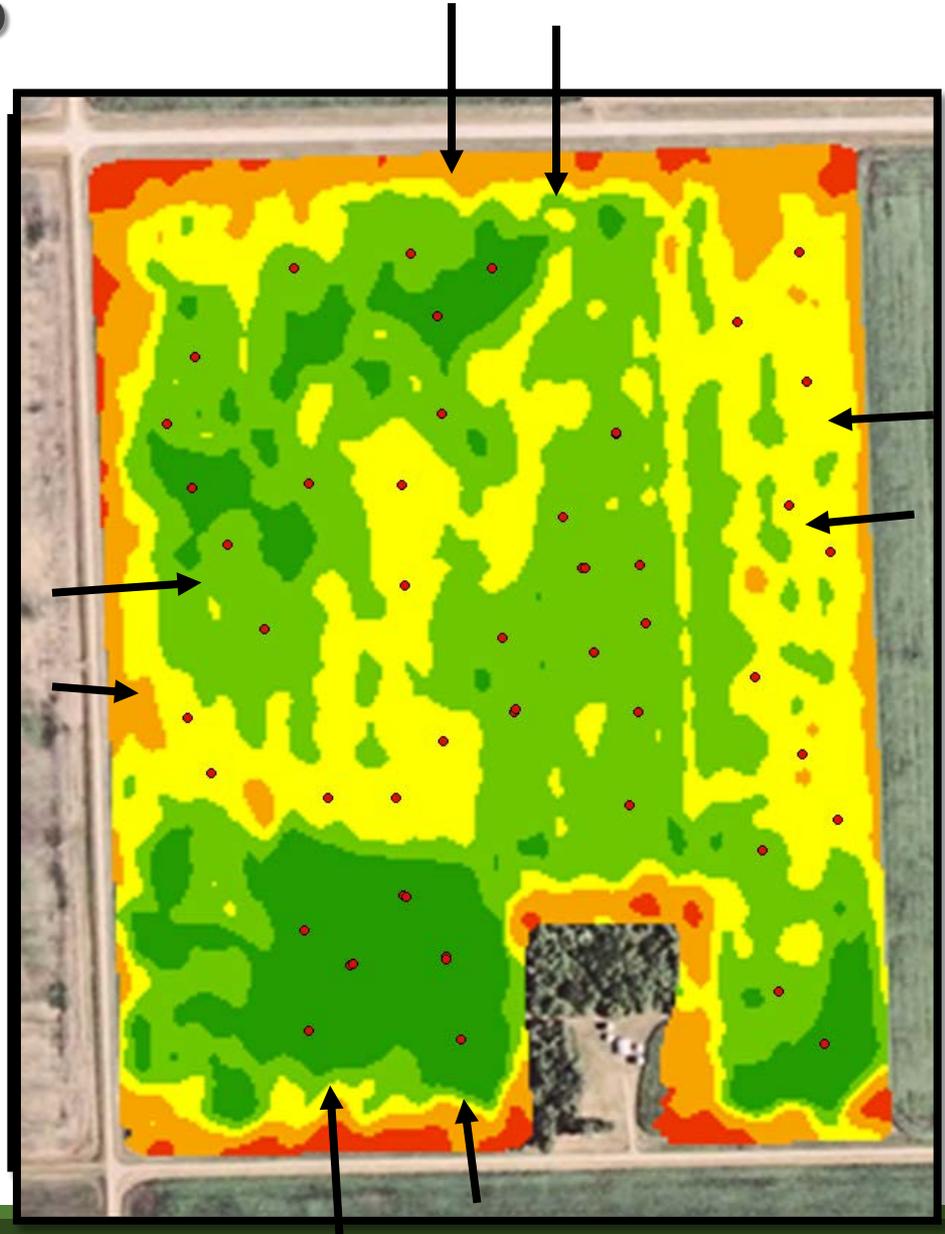
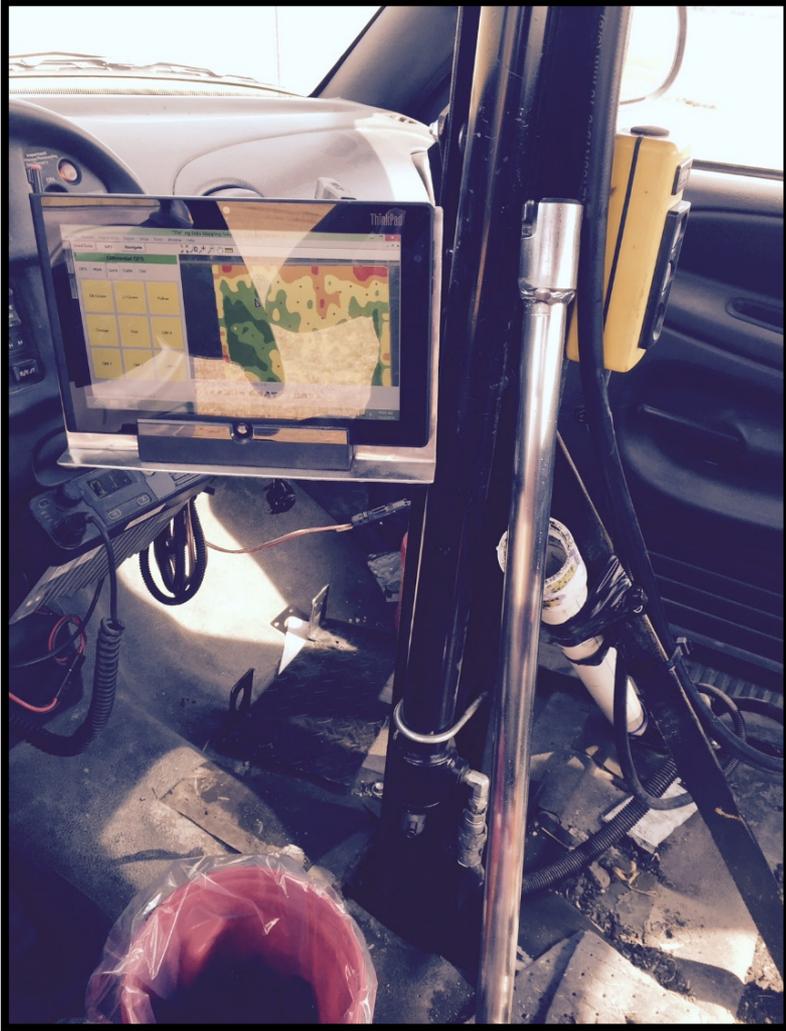
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What is Soil Sampling?

- **Soil sampling for agronomic purposes is taking soil cores (long stick of soil) from a field, sending them to a soil analysis laboratory**
- **Soil sampling provides agronomists and farmers with a relative measure of the nutrient status in soils**
- Soil sampling results provides critical information for environmentally responsible fertilizer applications
- Soil sampling provides critical information to help farmers make economical fertilizer applications



What is Soil Sampling?



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- The soil sampling results are calibrated by agronomic research so that the results are useable
- The numbers in the “V Low, Low, Med, High” categories are placed there because university research over many site-years tells us that is where those number belong
- If the **sampling depth is different**, chemistry test at the lab is different, or samples are not handled properly the values on the test are meaningless



Soil Analysis by Agvise Laboratories
(<http://www.agvise.com>)
Northwood: (701) 587-6010
Benson: (320) 843-4109

SOIL TEST REPORT

FIELD ID: [REDACTED]
 SAMPLE ID: Dark Green
 FIELD NAME: [REDACTED]
 COUNTY: [REDACTED]
 TWP: [REDACTED]
 SECTION: [REDACTED]

PREV. CROP: Soybeans

SUBMITTED BY: LO1273

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LOVAS FARMS
 607 5TH AVE SE
 HILLSBORO, ND 58045

REF # 1
LAB # N

Date Sampled _____ Date Received **11/17/2015**

Nutrient In The Soil		Interpretation	1st Crop Choice		2nd Crop Choice	
		V Low Low Med High				
	0-6" 9 lb/ac 6-24" 9 lb/ac		Wheat-Spring		Corn-Grain	
			YIELD GOAL		YIELD GOAL	
			80 BU		180 BU	
			SUGGESTED GUIDELINES		SUGGESTED GUIDELINES	
			University		University	
			LB/ACRE	APPLICATION	LB/ACRE	APPLICATION
Nitrate	Olsen 4 ppm	*****	N 140		N 160	
Phosphorus	300 ppm	*****	P ₂ O ₅ 65	Broadcast	P ₂ O ₅ 95	Broad
Potassium	924 lb/ac	*****	K ₂ O 10	Band (Starter)*	K ₂ O 10	Band (1
Chloride	0-6" 120 +lb/ac 6-24" 360 +lb/ac	*****	Cl 0		Cl 0	
Sulfur	1.6 ppm	*****	S 0		S 0	
Boron	0.43 ppm	*****	B 0		B 0	
Zinc	11.0 ppm	*****	Zn	Not Available	Zn 10	Broad
Iron	3.2 ppm	*****	Fe 0		Fe 0	
Manganese	1.06 ppm	*****	Mn 0		Mn 0	
Copper	912 ppm	*****	Cu 0		Cu 0	
Magnesium	7315 ppm	*****	Mg 0		Mg 0	
Calcium	105 ppm	*****	Lime		Lime	
Sodium	4.3 %	*****				
Org.Matter	3.7 %	*****				
Carbonate(CCE)		*****				
	0-6" 1.47 mmho/cm 6-24" 2.35 mmho/cm	*****	Soil pH	Buffer pH	Cation Exchange Capacity	% B
Sat. Sats		*****	0-6" 7.9		45.4 meq	(55-75)
		*****	6-24" 8.1			80.6

General Comments: Texture is not estimated on high pH soils.

Why Is Soil Sampling Depth So Important?

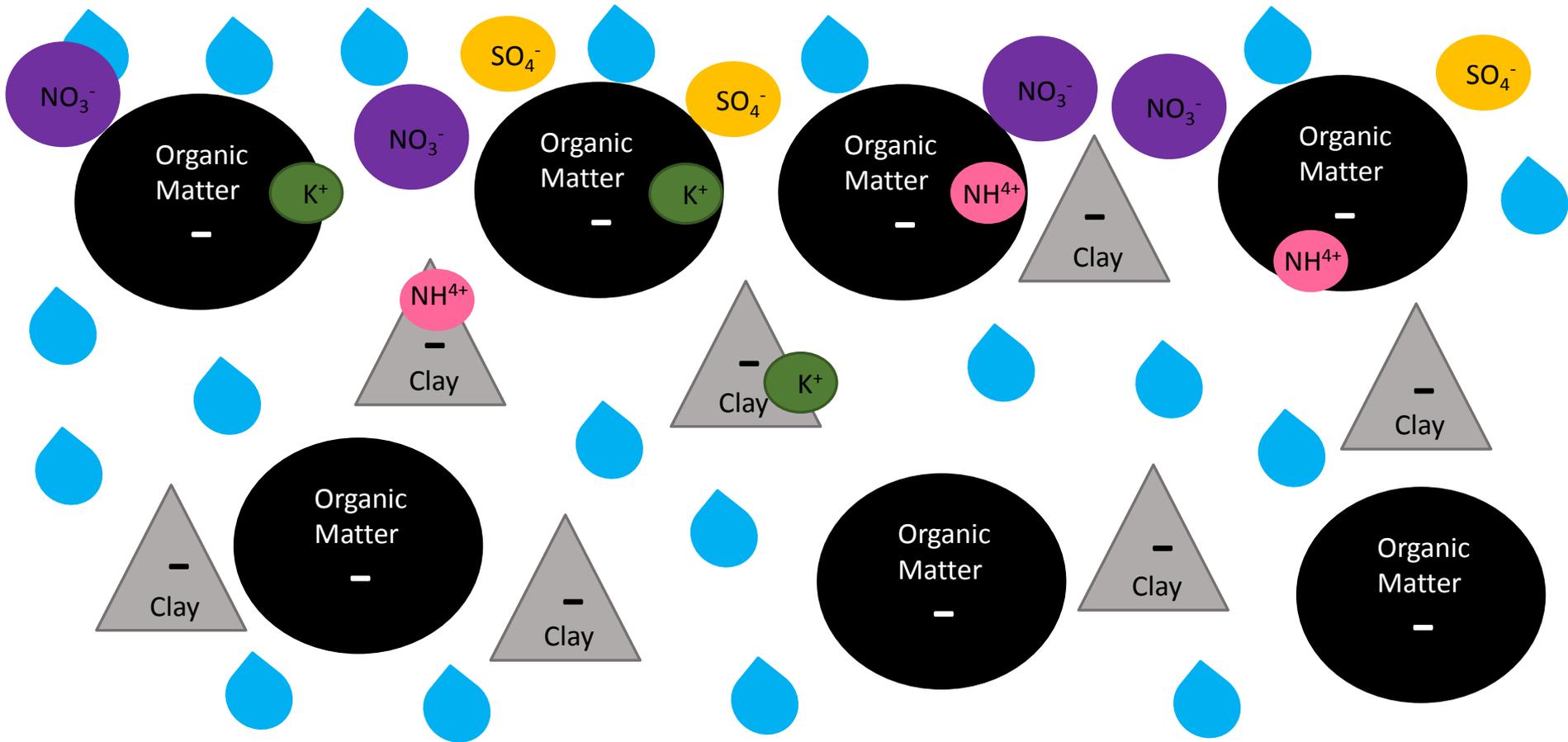
Soil Surface	Soil Properties	Crops
0-6 inch	pH, P,K, OM, Cl, S Ca, Mg, CEC, Zn, NH ₄ ⁺ -N, Fe, Mn, Cu, soluble salts, NA	Alfalfa, clovers (analyze only 0-6 inch depth, nitrate analysis at deeper depths not necessary).
6-24 inch	Soluble salts, NO ₃ -N, S, Cl (in addition to 0-6 inch depth)	Wheat, barley, oats, durum, corn, soybean, dry bean, potato, canola, crambe, mustard, sunflower, grass hay, pasture, millet, canary seed, flax, safflower, buckwheat, lentil, field pea, sorghum, sudangrass. (Separate 0-24 inch depth into a 0-6 inch and 6-24 inch depth.)
24-48 inch	NO ₃ -N, in addition to the 0-6 inch and 6-24 inch depths	Sugarbeet, malting barley. (Sunflower if greater than 30 lb N/acre are anticipated at the 24-48 inch depth.) (Separate cores into 0-6 inch, 6-24 inch and 24-48 inch depths.)

Figure 1. Depth recommended generally for soil analysis of certain properties and nitrate analysis for crops.

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Why is Soil Sampling Depth So Important?

- Dr. Franzen – NDSU Extension Soil Specialist – updated the North Dakota fertilizer recommendations for these North Dakota Crops within the last 10 years
 - 2015 – Sunflower
 - 2014 – Corn
 - 2013 – Spring Wheat
 - 2009 – Winter Wheat
 - 2009 – Winter Rye
 - 2009 - Canola and Mustard
 - 2007 – Malting and Feed Barley
- All of these crops require a 24 inch soil sample in order to create accurate fertilizer application recommendations
- Many Commodity Groups as well as others have invest grant moneys into updating these fertilizer recommendations

NORTH DAKOTA'S

Nutrient Reduction Strategy

Nutrient Criteria Workgroup Meeting Summary

November 9, 2015 • Bismarck, ND • 1:00 p.m. – 2:30 p.m.

Background

The Nutrient Criteria Workgroup met in person and via conference call on Monday, November 9, 2015 from 1:00 pm -2:30 pm at the North Dakota Department of Health's Environmental Training Center, Bismarck, ND. The following is a list of those in attendance.

List of Attendees:

Name	Affiliation
Ted Alme	Natural Resources Conservation Service
Al Basile*	USEPA Region 8
Keith Demke	City of Bismarck
Mike Eil	North Dakota Department of Health, Division of Water Quality
Scott Elstad	North Dakota Game and Fish Department
Jim Hausauer*	City of Fargo
Heather Husband*	North Dakota Department of Health, Division of Water Quality
Scott Korom	Barr Engineering/North Dakota Soybean Council
Paul Mathiason	Red River Valley Sugarbeet Growers
Kendall Nichols	North Dakota Soybean Council
Shaun Quissell	North Dakota Department of Agriculture
Pete Wax	North Dakota Department of Health, Division of Water Quality
Jim Ziegler	Minnesota Pollution Control Agency

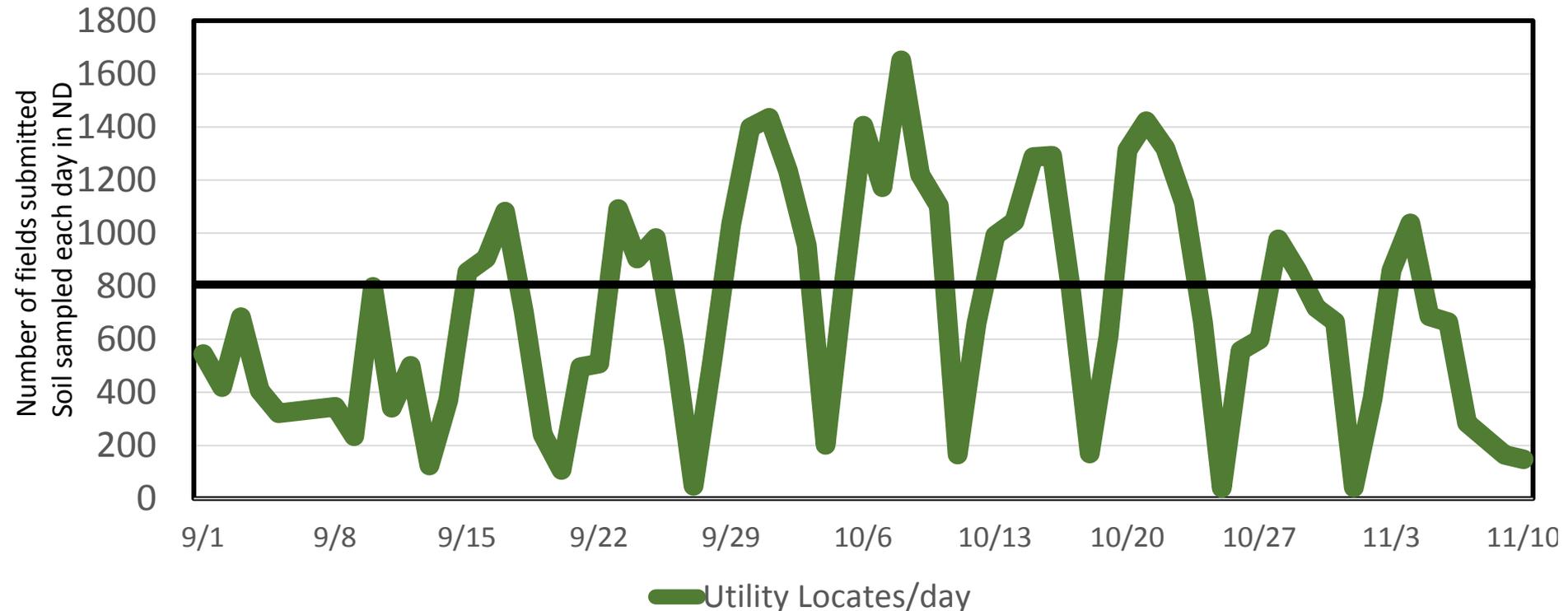
*Participated via conference call

Mike Eil with the North Dakota Department of Health (NDDoH) opened the meeting with introductions. Mike then provided an update on the Nutrient Reduction Strategy Development process. Mike said that the goal of the NDDoH is to have a draft strategy by the end of December 2015. That said, Mike added that there were a couple of issues related to the strategy on which he wanted feedback from the Nutrient Criteria Workgroup. One was a recommendation made by the Point Source Workgroup (see November 20, 2014 Point Source Workgroup meeting summary) for the NDDoH to adopt narrative nutrient criteria in the state's water quality standards. The other issue was the development of a technical support

Is It Possible for North Dakota One-Call To Do These Locates in a Timely Manner?

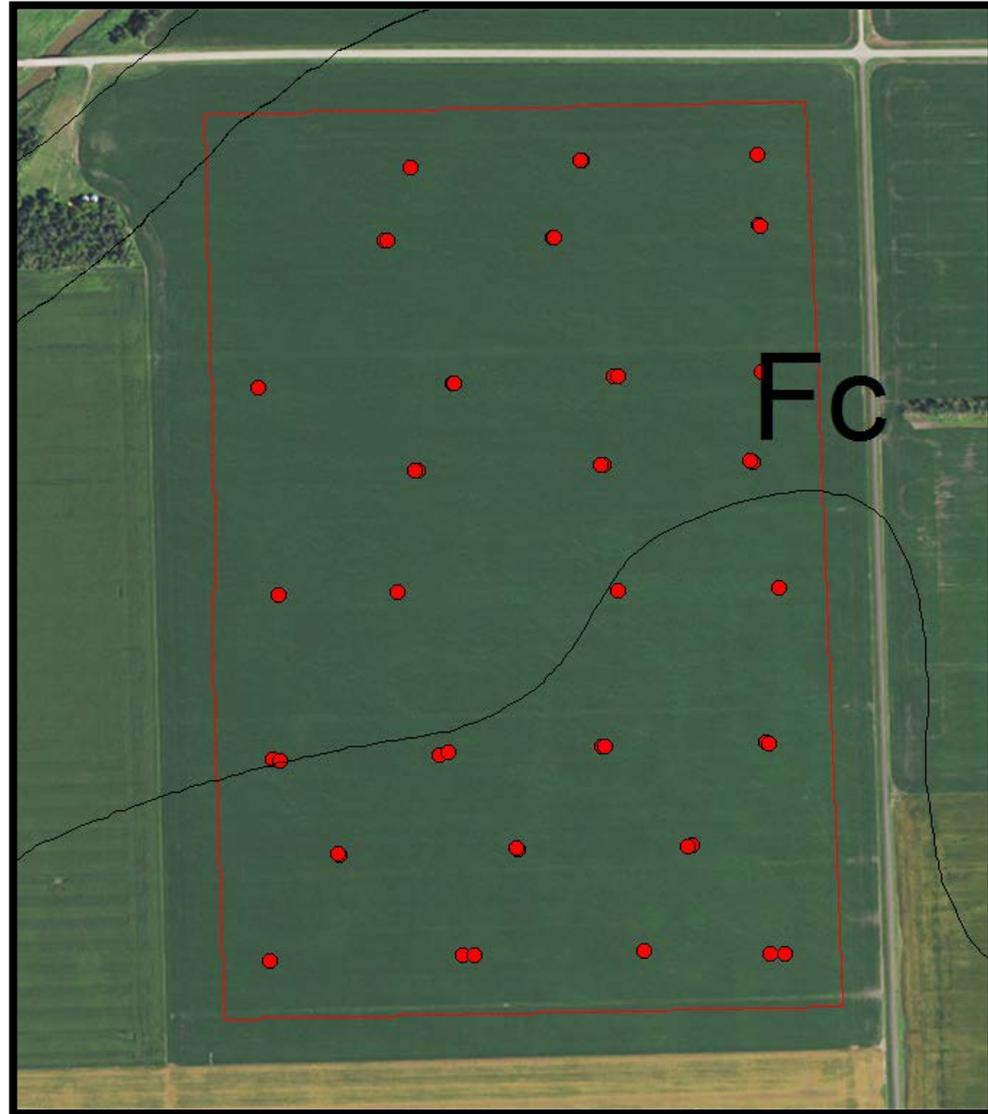
Potential Utility Locates/day in North Dakota
Based on ND fields soil sampled and submitted each day
to AGVISE Laboratories for nutrient testing – fall 2015

Potential Utility locates Per Day – Fall 2015



Idea...

- Soil Samples are NOT taken from the field edge. It is agronomically incorrect to take sample from the field edge.
- The edge of the field is where most of the utilities are buried.
- IDEA for Soil Sampling:
 - One-Call could have a program where the soil sampler could submit a shape file of the field boundary
 - Soil Samplers could have a policy of not sampling the outside 200 feet around a field
 - If there are no utilities on the inside of that 200 foot boundary, a message from One-Call could be sent back to the soil sampler with information that no locate is necessary
- Turn on a Shape File of underground utilities without identifying what those utilities are



Summary

- Soil Samplers do not sample the edge of the field where most of the underground utilities are located.
- Soil Sampling to a depth of 24 inches is necessary for keeping North Dakota Agriculture Economically and Environmentally Viable
- North Dakota Commodity groups have spent a lot of money in the last 10 years with soil science research updating fertilizer recommendations which require soil sampling to a depth of 24 inches
- Most of the soil sampling in North Dakota happens from August through beginning of November.
 - Is it realistic for North Dakota One-Call to do locates in a timely manner to approximately 70% of all of North Dakota's fields, or approximately 800 fields per day?

Thank You!

