Using Soil Mapping to Expand the Agronomist’s Toolbox

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Where does it all start??

“Man only has a thin Layer of soil Between him and Starvation”

unknown
Soil pH and Nutrient Availability

- Nitrogen
- Phosphorus
- Potassium
- Sulphur
- Calcium
- Magnesium
- Iron
- Manganese
- Boron
- Copper/Zinc
- Molybdenum

pH Levels: 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Mulder’s Chart of Nutrient Interaction

**ANTAGONISM**
Decreased availability of a nutrient to a plant due to the action of another nutrient

**STIMULATION**
High level of a nutrient increases the demand by the plant for another nutrient
Better Than Nothing??
Traditional Practices of Field Soil Measurement

• Grid
• Composite Zone

Is there “gaps”? Can we do better?
Grid Sampling
2.5 acres:
(approx 2 football fields)

Standard sampling depth = 6”
6” x 1 acre = 2 million lbs
2 million lbs x 2.5 acres =
~5 million lbs
~80,560 – 20 liter pails =
210 DUMP TRUCKS
Lab Sample

~1 teaspoon
Grid Sampling
Grid Sampling
Zone Sampling
What can Be Missed??

- Soil sample from same zone.
- Indicates variability within zone.
Complimenting Data

Yield Data
Complimenting Data

Yield Data

Planting/Fertilizing
Complimenting Data

- Yield Data
- Satellite Imagery
- Planting/Fertilizing As Applied
Complimenting Data

- Yield Data
- Planting/Fertilizing As Applied
- Satellite Imagery
- Machine Data
What’s the Missing Link?
Attention to Detail
Attention to Detail
How Can WE Put This to Use?
Case Study

- 2.5 ac Grid vs SoilOptix
- Optimizing not Saving
SoilOptix: 4 Zones in 2.5ac Grid

Pink: 0.09ac x 4,875lbs/ac = 438.75 lbs
Grey: 0.84ac x 3,250lbs/ac = 2,730 lbs
Light Blue: 0.82ac x 1,625lbs/ac = 1,333 lbs
Blue: 0.74ac x 0lbs/ac = 0 lbs

TOTAL: 4,502 lbs

Light Blue: 2.5ac x 1,625lbs/ac = 4,063 lbs
SoilOptix: 4 Zones in 2.5ac Grid

Pink: 0.58ac x 4,875lbs/ac = 2,828 lbs
Grey: 0.82ac x 3,250lbs/ac = 2,665 lbs
Light Blue: 0.91ac x 1,625lbs/ac = 1,479 lbs
Blue: 0.19ac x 0lbs/ac = 0 lbs

TOTAL: 6,972lbs

NEARLY 1,200lbs saved!!!

3,250lbs/ac = 8,125lbs
Soil pH

Lime VRA

Traditional 1 Acre Grid

Broad areas of concern addressed by 1 acre grid

Total lime - 104.7 tonnes

63.35ac at 0 ton/ac
Soil pH

30 ft Grid

SoilOptix® further defined areas of concern, applying higher rates on land needing more lime.

Total lime- 142.9 tonnes

63.43ac at 0 ton/ac
Agronomic Platforms
Final Thoughts

- Compliment Current P.Ag Data
- Fine tune management
- Discover pockets of opportunity
"Treat the earth well. It wasn’t given to you by your parents; it was loaned to you by your children."
- Proverb