

# *FeEDDHA – Working in the Real World of Soybean Production*

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# FeEDDHA as a Fertilizer

**Recommended use for managing iron chlorosis in soybean:**

- Mix dry power in a ratio no less than 1 lb FeEDDHA to 2 gallons water
- Apply in-furrow at planting time
- Apply 2-3 lb per acre

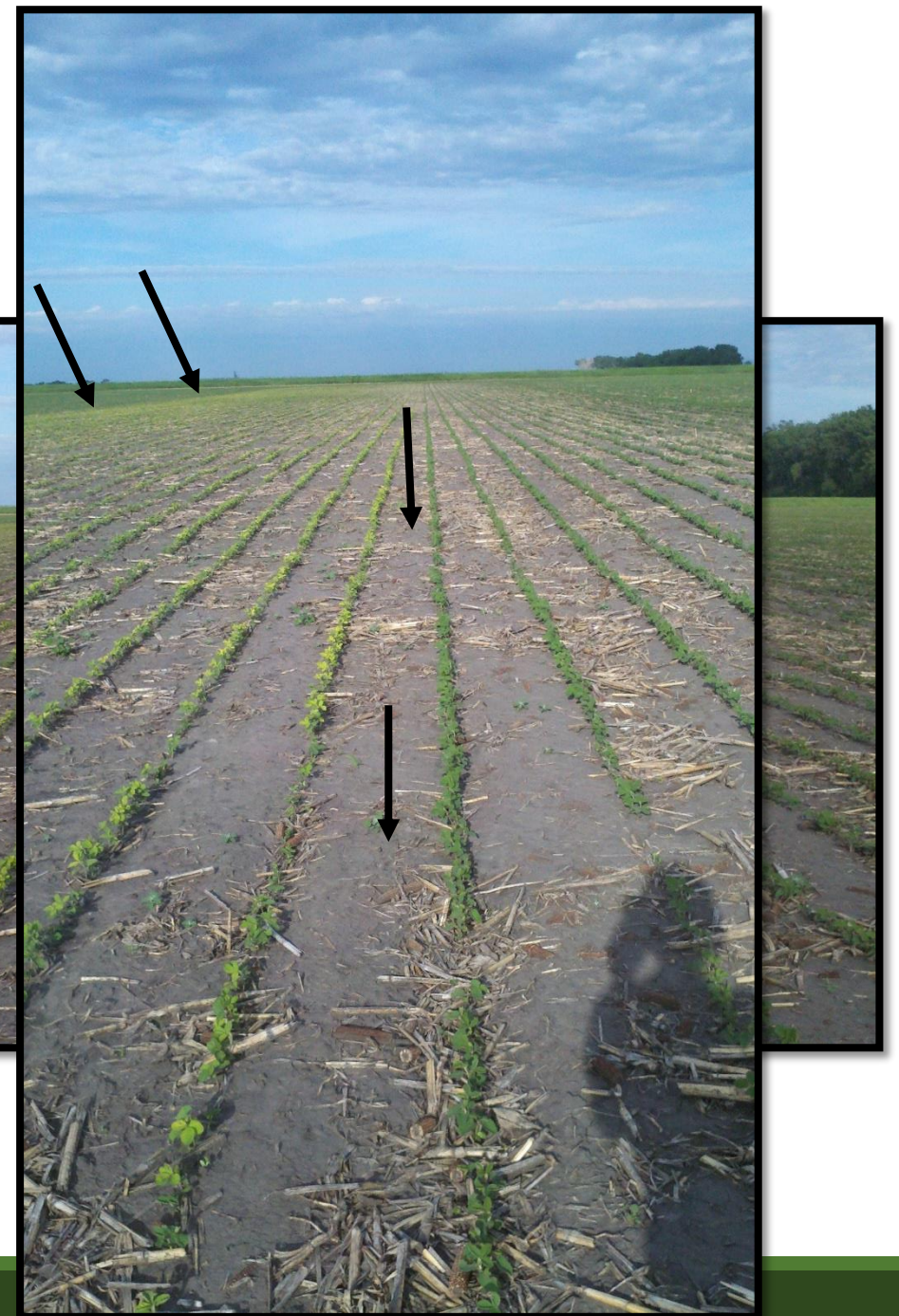
**Has been used successfully as a management tool for iron deficiency chlorosis (IDC) in soybean in the RRV**





# Application of FeEDDHA in 2012

- Used 2 lb/acre flat rate across the field
- Left a check strip in the field
- Visual difference in chlorosis severity



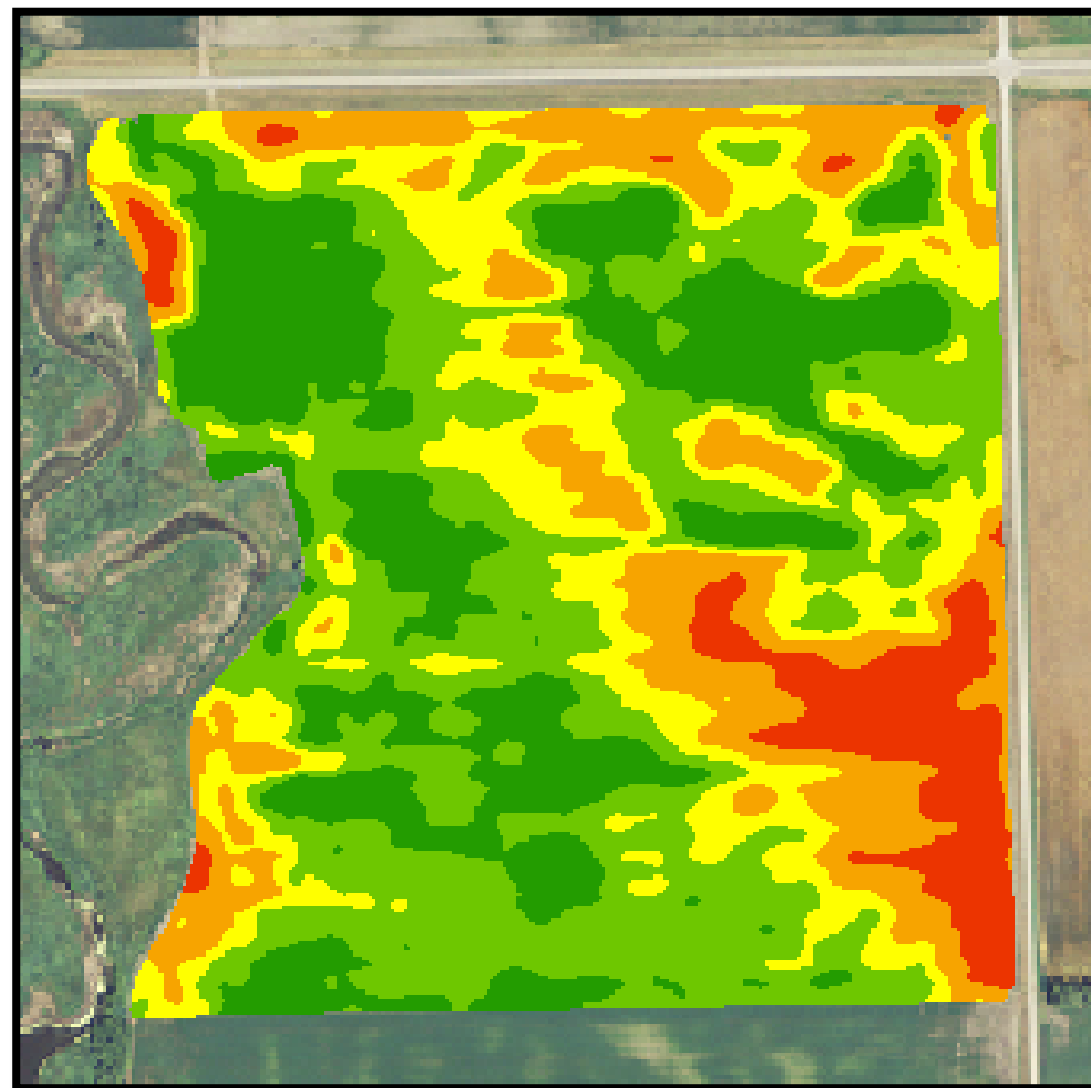
# About the Field

In 2010, soybean IDC (iron deficiency chlorosis) plot was planted

Fall of 2010 zones were created from 2009 corn yield data and satellite imagery

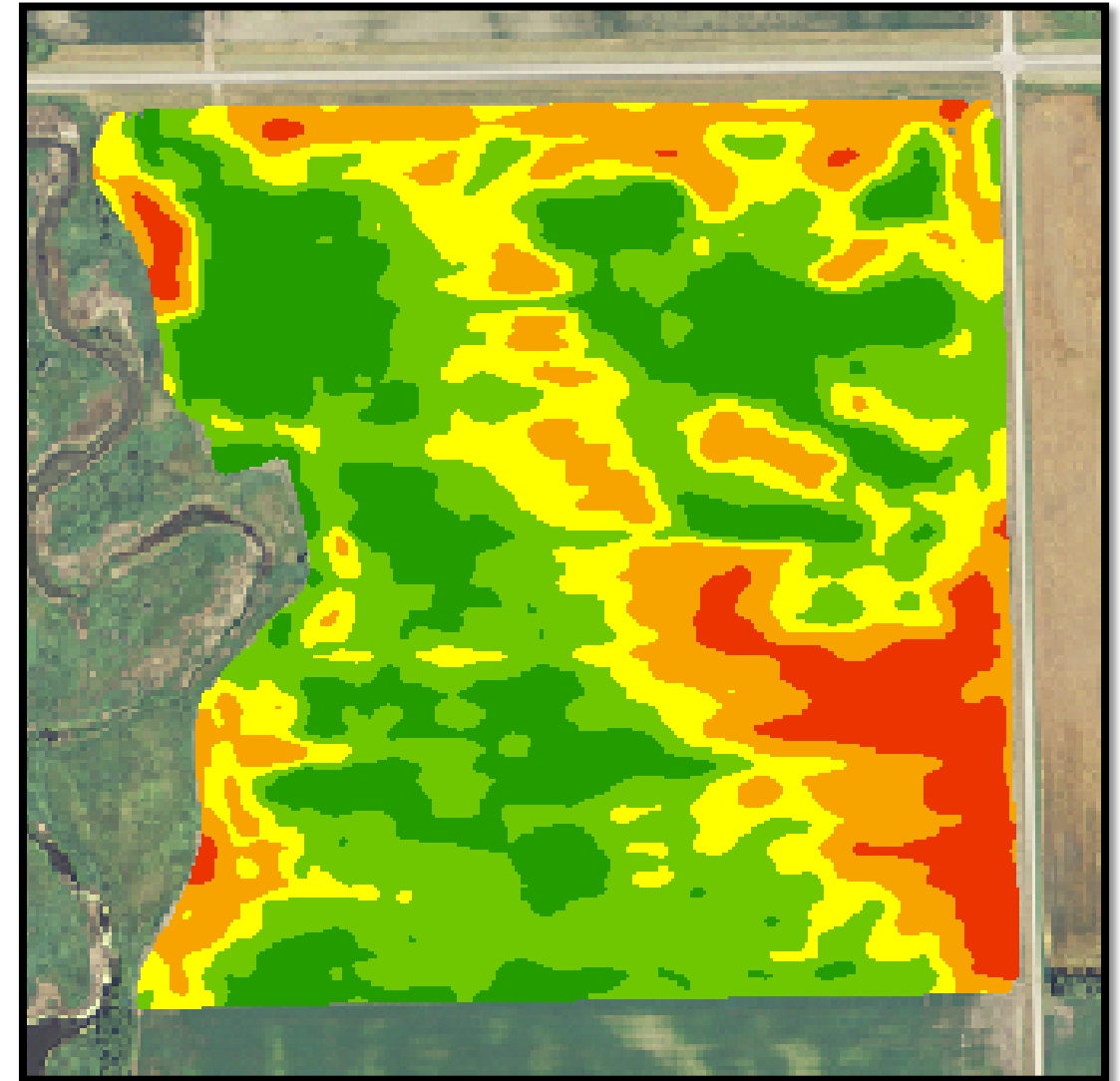
These sample zones were used primarily to manage phosphorus and potassium

2014 used these zones to create variable rate FeEDDHA prescription



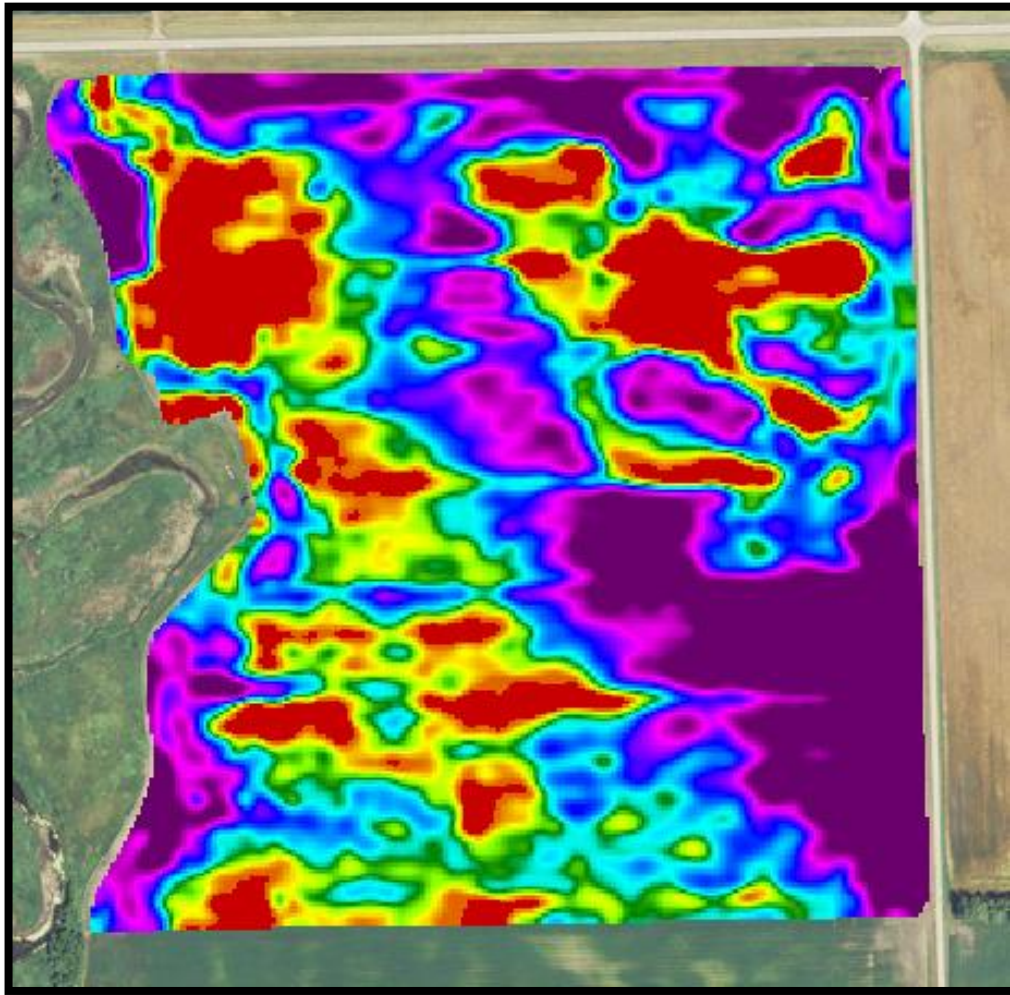
# About the Field

- **Dark Green 2010 Zone Sample Results**
  - Olsen P – 8 ppm      Potassium – 148 ppm
  - CaCO<sub>3</sub> – 1.3%      Soil pH – 8.1
  - Sol. Salts – 0.25 mmho/cm
- **Light Green**
  - Olsen P – 3 ppm      Potassium – 102 ppm
  - CaCO<sub>3</sub> – 4.0%      Soil pH – 8.3
  - Sol. Salts – 0.30 mmho/cm
- **Yellow**
  - Olsen P – 2 ppm      Potassium – 86 ppm
  - CaCO<sub>3</sub> – 2.0%      Soil pH – 8.3
  - Sol. Salts – 0.33 mmho/cm
- **Orange**
  - Olsen P – 2 ppm      Potassium – 87 ppm
  - CaCO<sub>3</sub> – 4.3%      Soil pH – 8.4
  - Sol. Salts – 0.35 mmho/cm
- **Red:**
  - Olsen P – 6 ppm      Potassium – 74 ppm
  - CaCO<sub>3</sub> – 2.9%      Soil pH – 8.5
  - Sol. Salts – 0.31 mmho/cm





# FeEDDHA Prescription in 2014

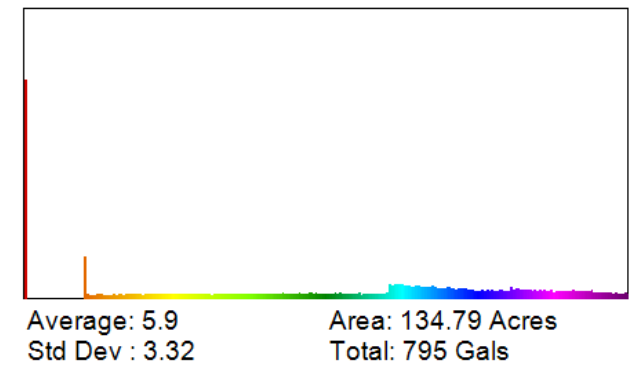
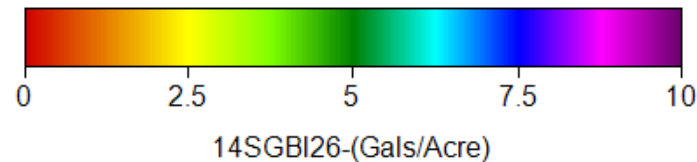


Prescription based on previously created zones

Rates varied from 0-10 gallons per acre.  
2 gallons = 1 lb Soygreen

Total Soygreen used: 397.5 lb per field

- 2 lb rate would use 269.58 lb per field
- 3 lb rate would use 404.37 lb per field

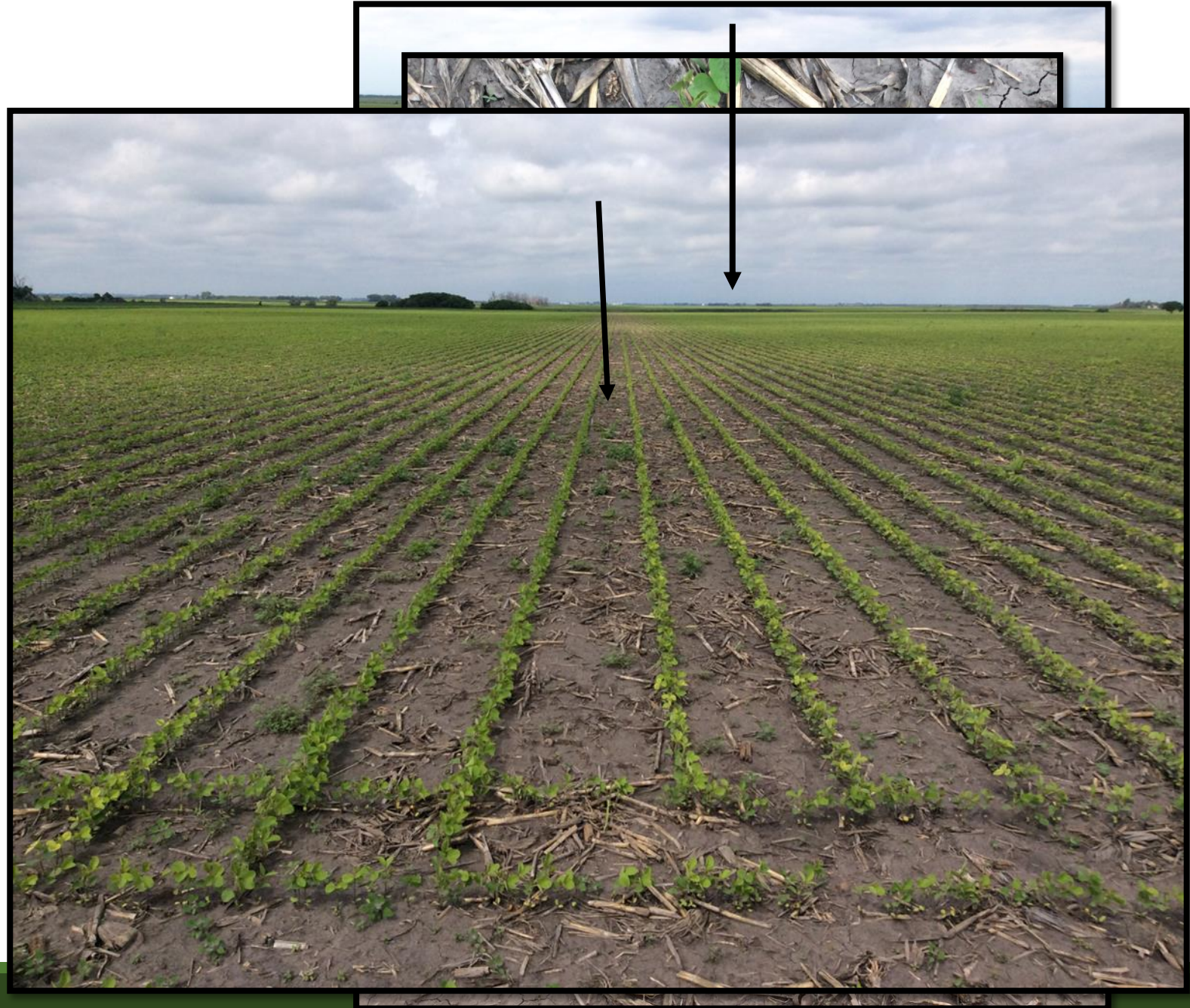




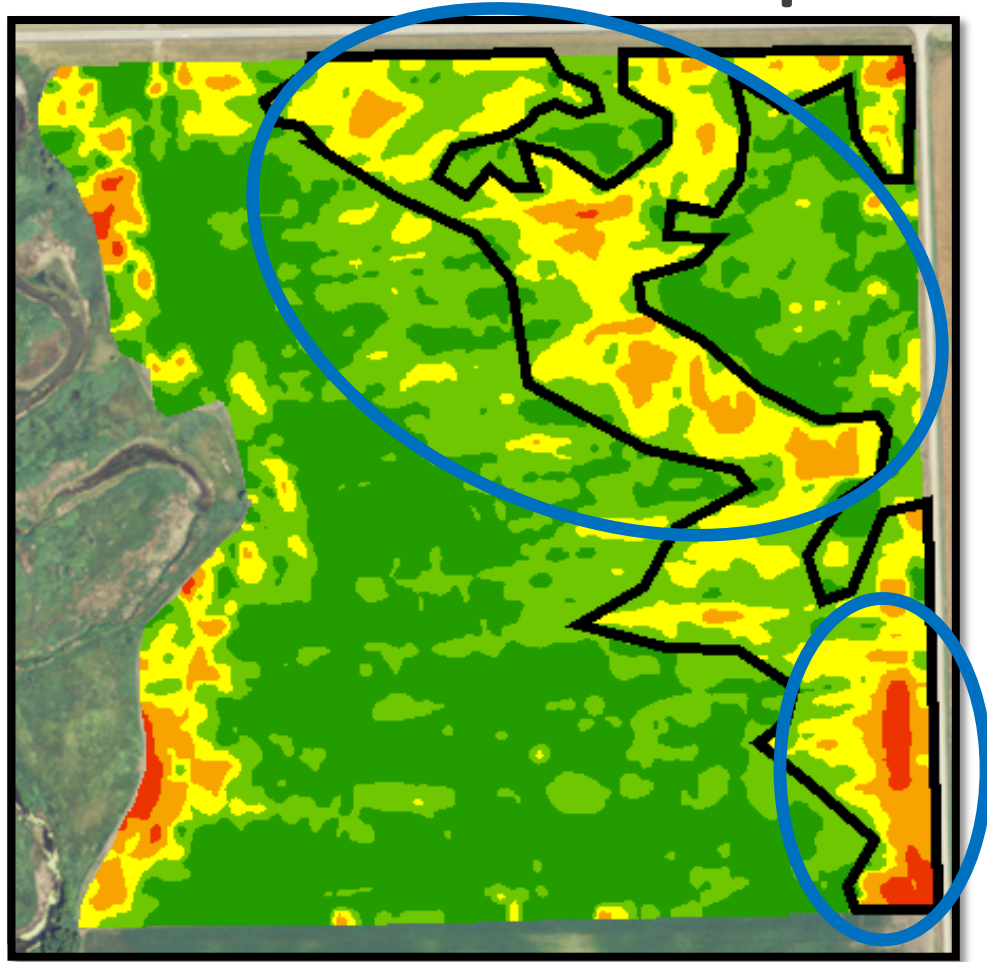
# FeEDDHA in 2014

Unifoliate Stage

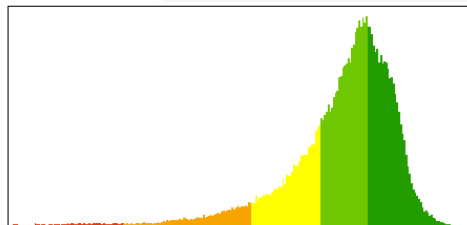
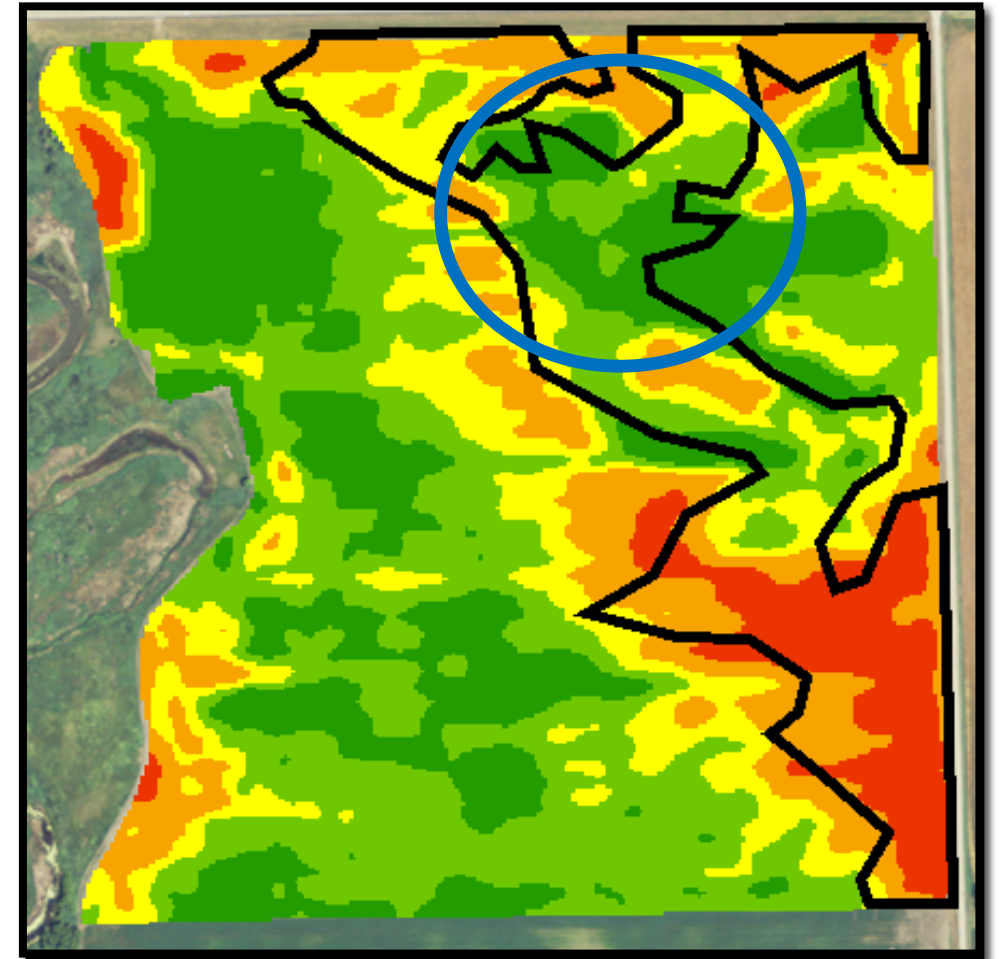
1-2 Trifoliate Stage



# 2014 Yield Map

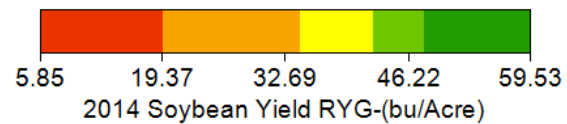


# Zone Map



Average: 44.4  
Std Dev : 6.89

Area: 135.13 Acres  
Total: 5999 bu





# Questions to Answer

Is it possible to variable rate FeEDDHA to manage IDC?

What are the correct parameters to use to create a prescription map for variable rate applications of FeEDDHA?

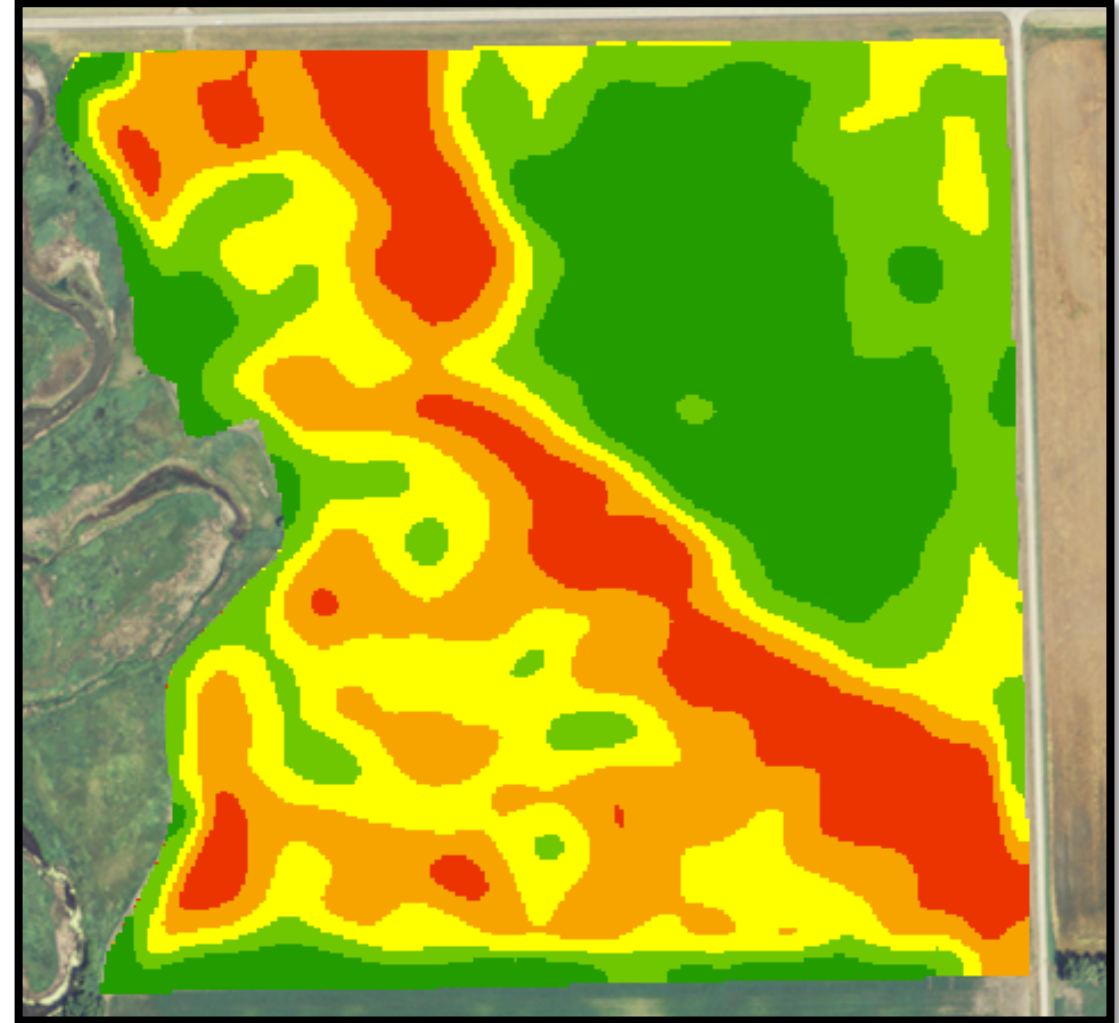
- Yield Map?
- Previous Nutrient Management Zones?
- Soil Testing Parameters?

# Other Ideas for Creating FeEDDHA Zones

Imagery- satellite imagery or other imagery from previous soybean crops

Yield Data – prescription map derived from soybean yield data

- Soil testing parameters might be better for selecting FeEDDHA rate
- IDC is unpredictable year to year. Accuracy for FeEDDHA prescription dependent upon the occurrence and severity of IDC the year the image or yield data is taken
- Yield data is fairly accurate geographically, but certain images may not be precise for this prescription



# Grid Sampling For FeEDDHA Prescription

Risk of iron chlorosis in soybeans based on salinity and  $\text{CaCO}_3$  content of soil

$\text{CaCO}_3$ , %	Salinity, mmho/cm			
	< 0.25	0.26-0.5	0.51 - 1.0	> 1.0
0 - 2.5	Low	Low	**	High
2.6 - 5.0	Moderate	Moderate	High	V. High
> 5.1	Moderate	High	V. High	Extreme

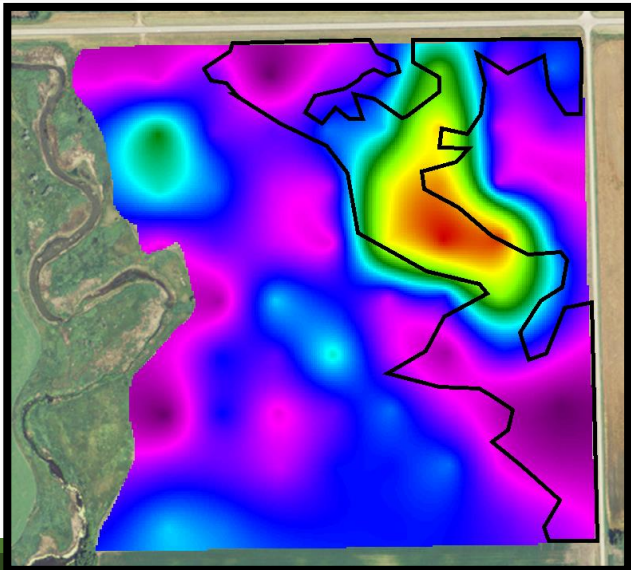
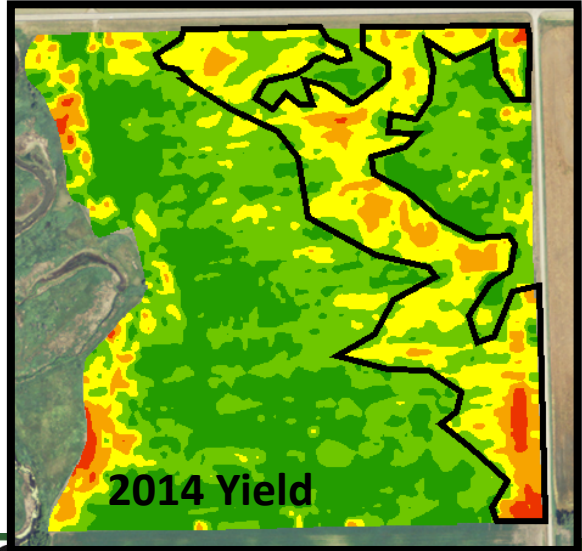
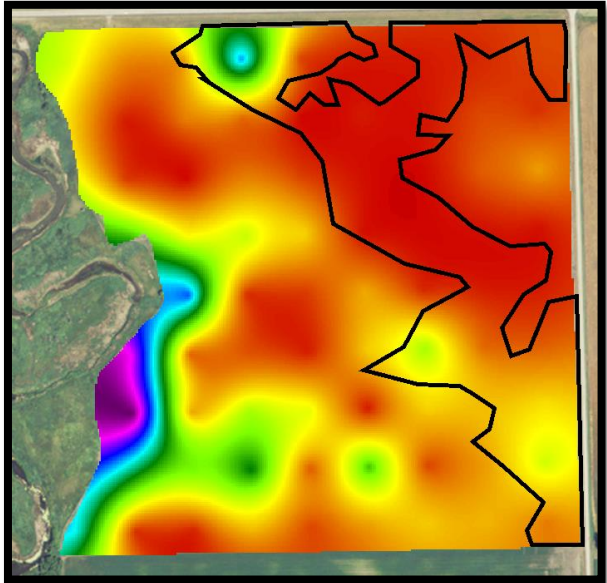
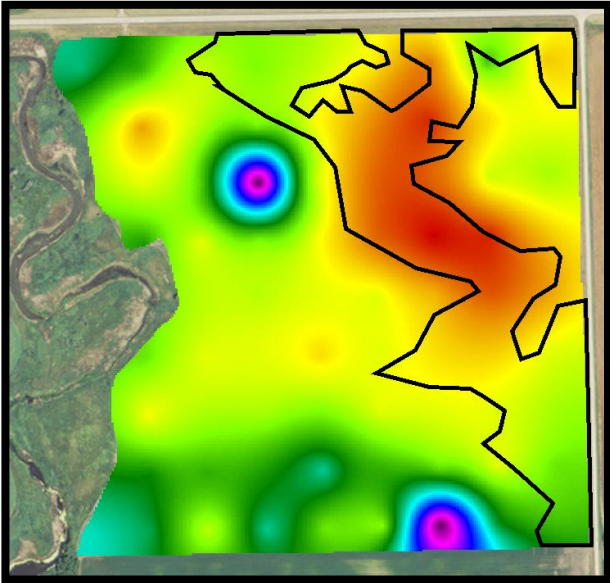
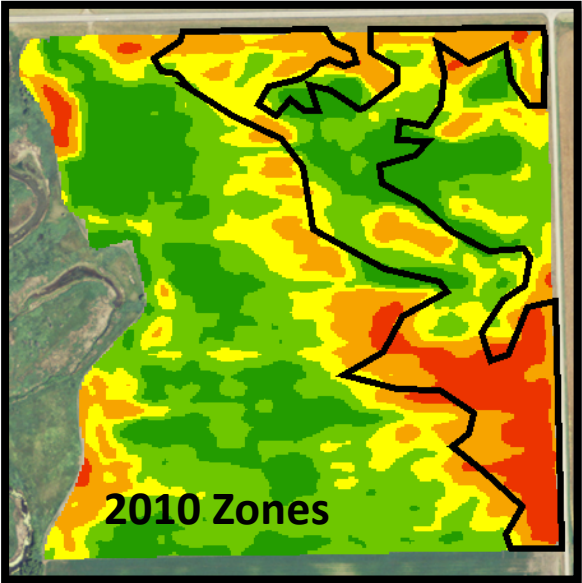
\*\* Low if  $\text{CaCO}_3$  is less than 1%, moderate if  $\text{CaCO}_3$  is 1-2.5%



# Grid Sampling

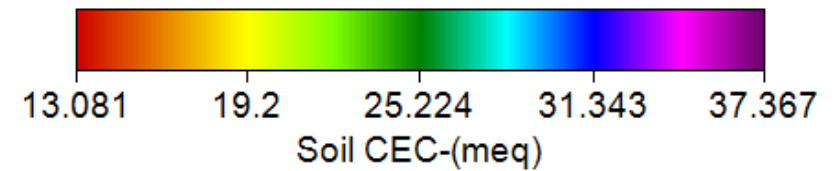
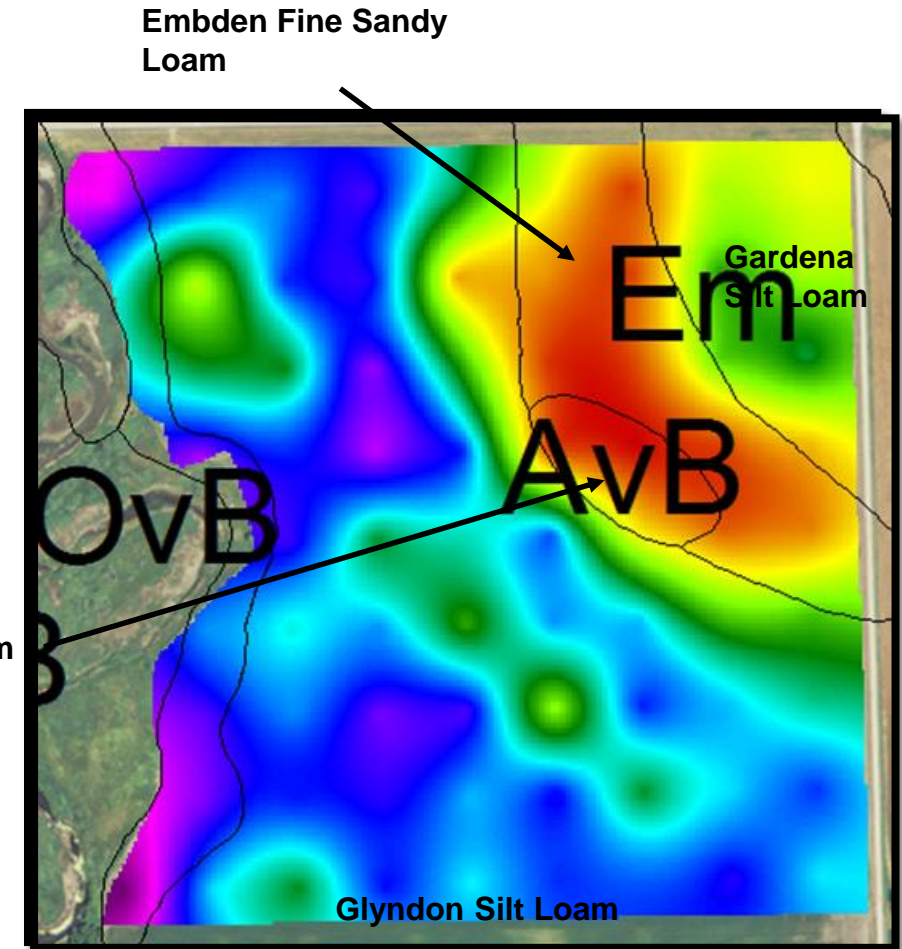
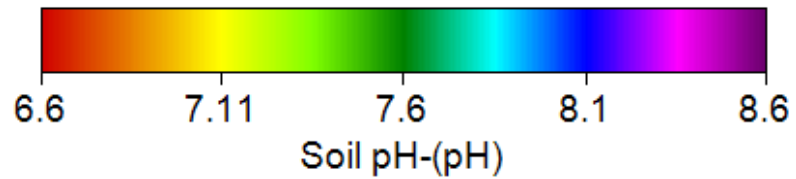
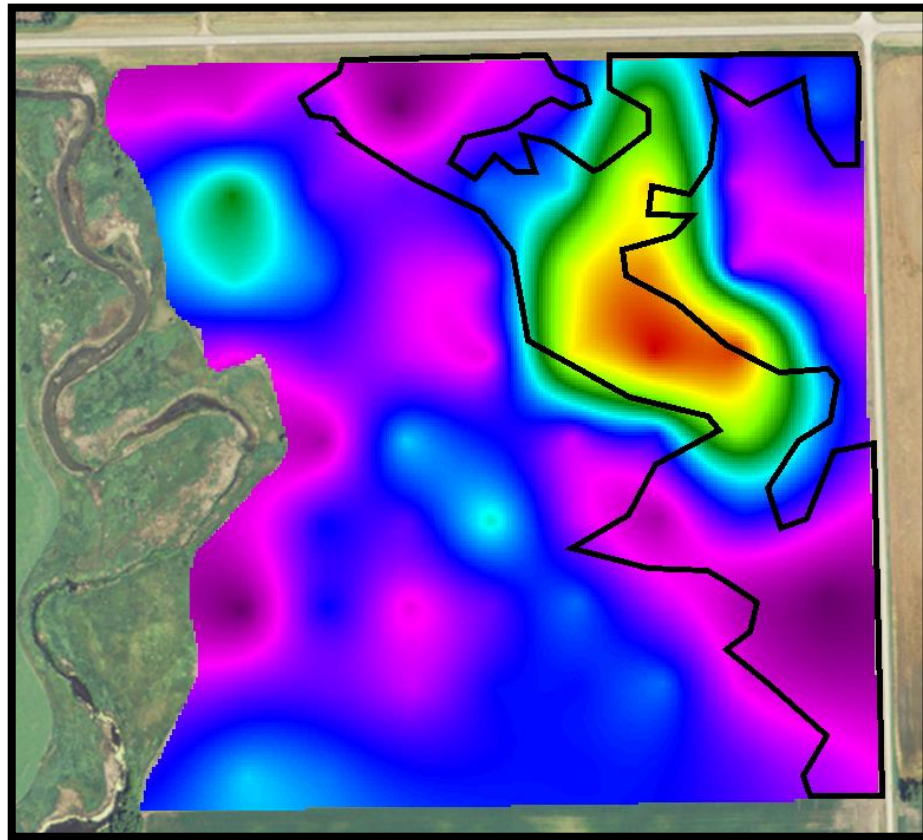


# Parameters to Create FeEDDHA Prescription



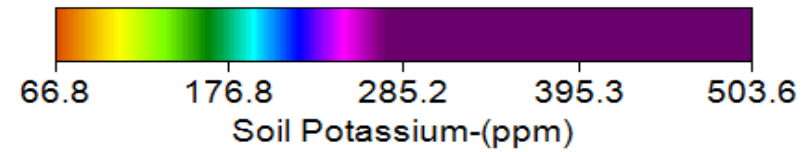
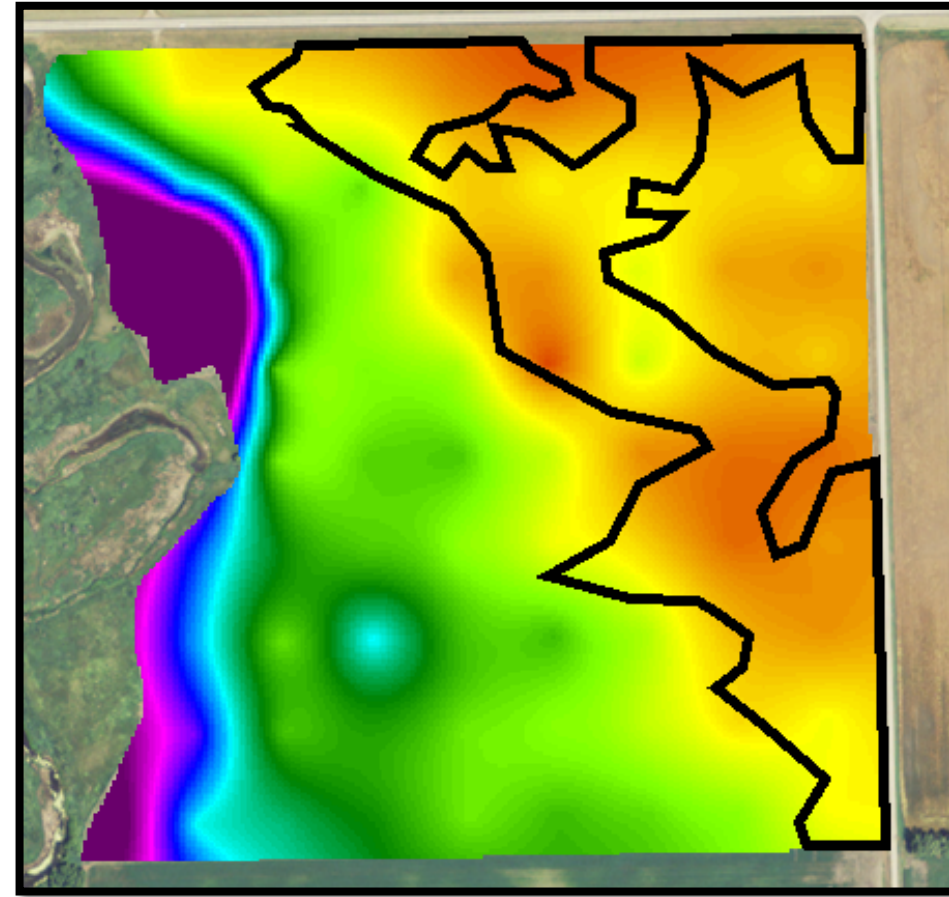
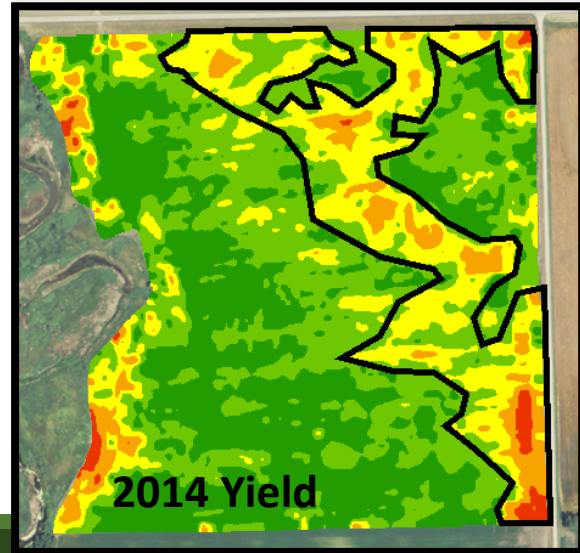
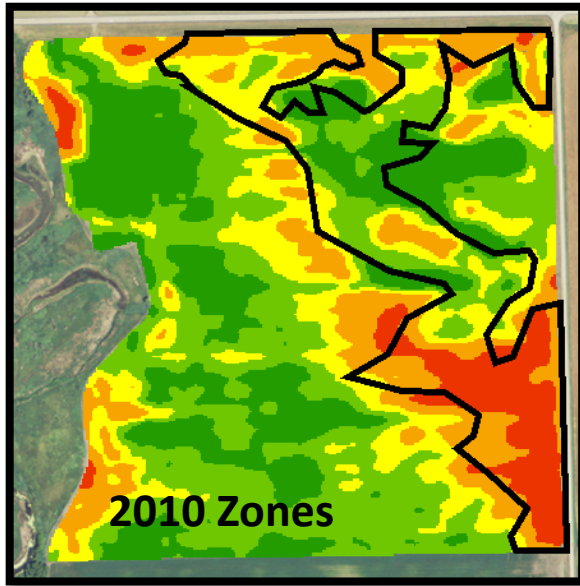


# #1 Soil Type Change

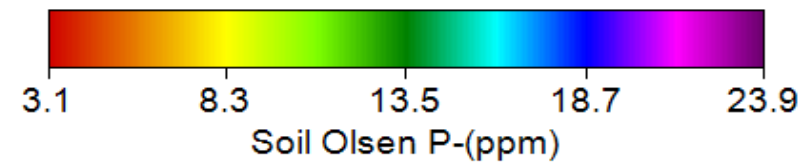
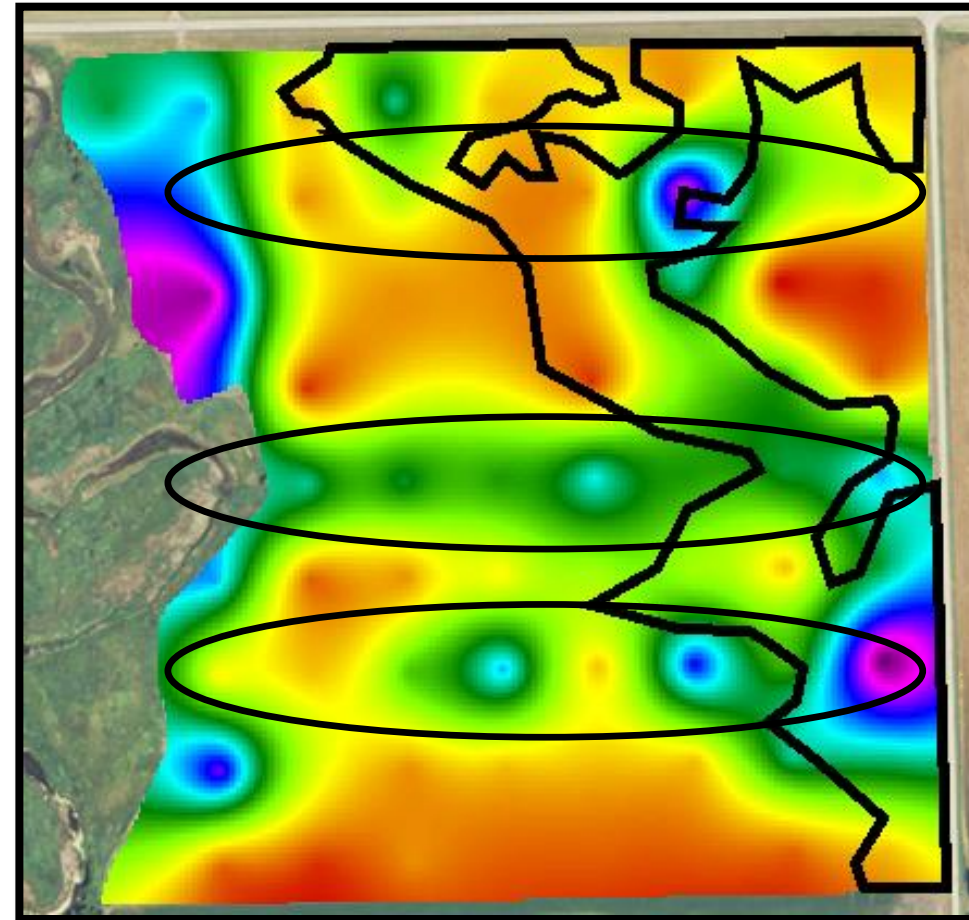
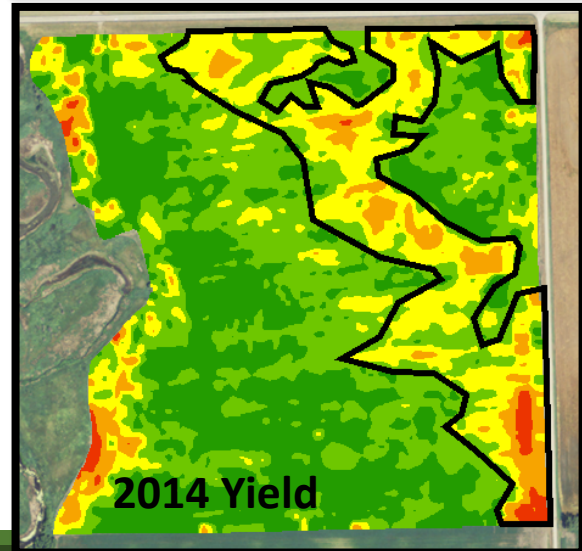
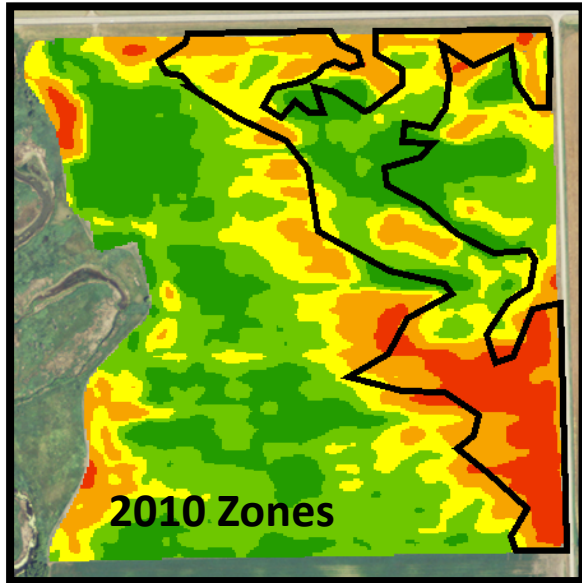




## #2 Potassium Levels



# #3 Phosphorus Levels



# Summary

Grid Sampling for FeEDDHA prescription did not work for this field because of other things happening in this field

Grid Sampling did help to learn about what is going on in this field in addition to IDC that might be making the IDC worse

Need more research on grid sampling to develop FeEDDHA prescriptions



# Are There Any Questions?

