

# Precision Agriculture Using Yield Maps

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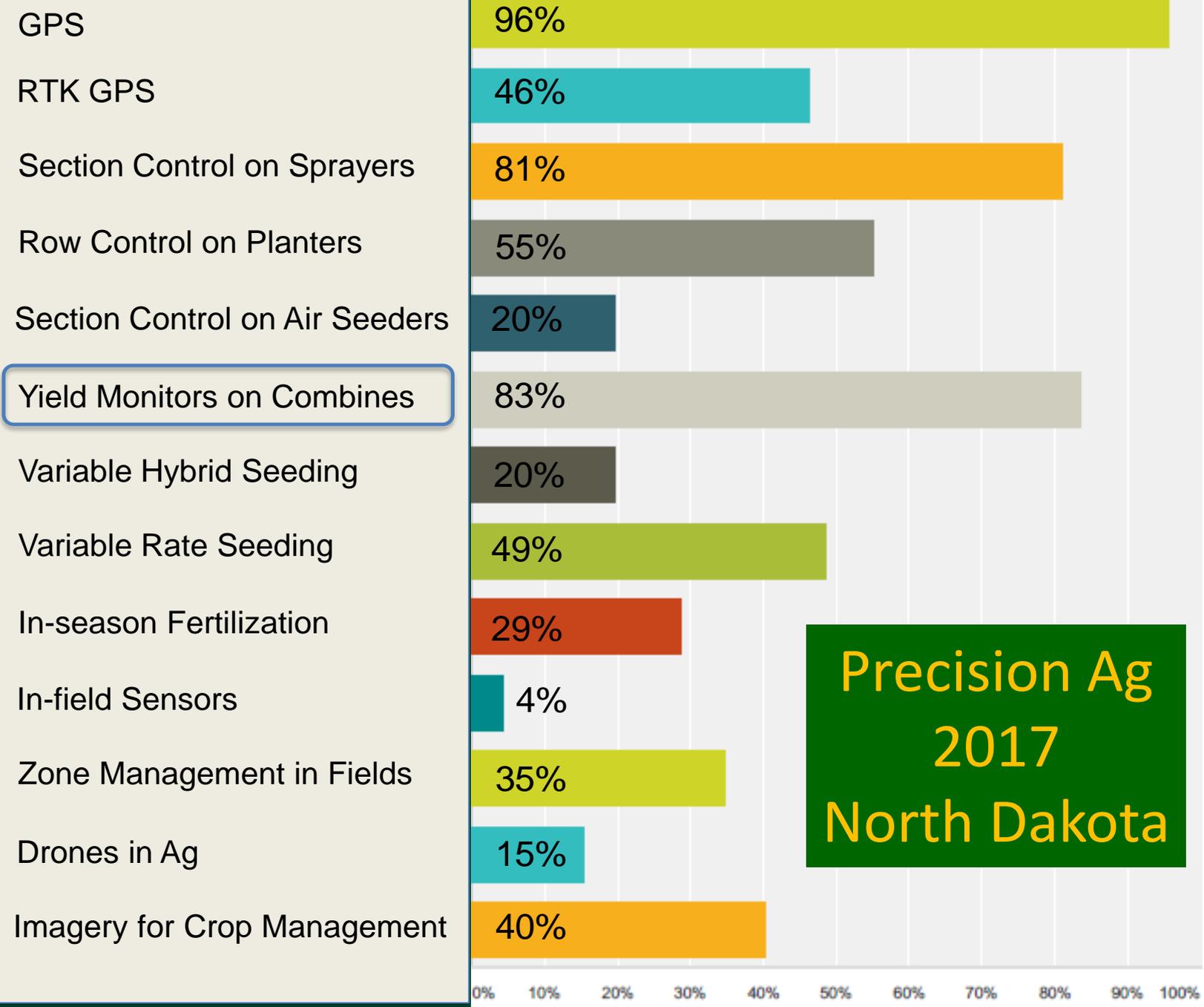
EXTENDING KNOWLEDGE >> CHANGING LIVES

**NDSU** EXTENSION  
SERVICE

# Using Yield Data

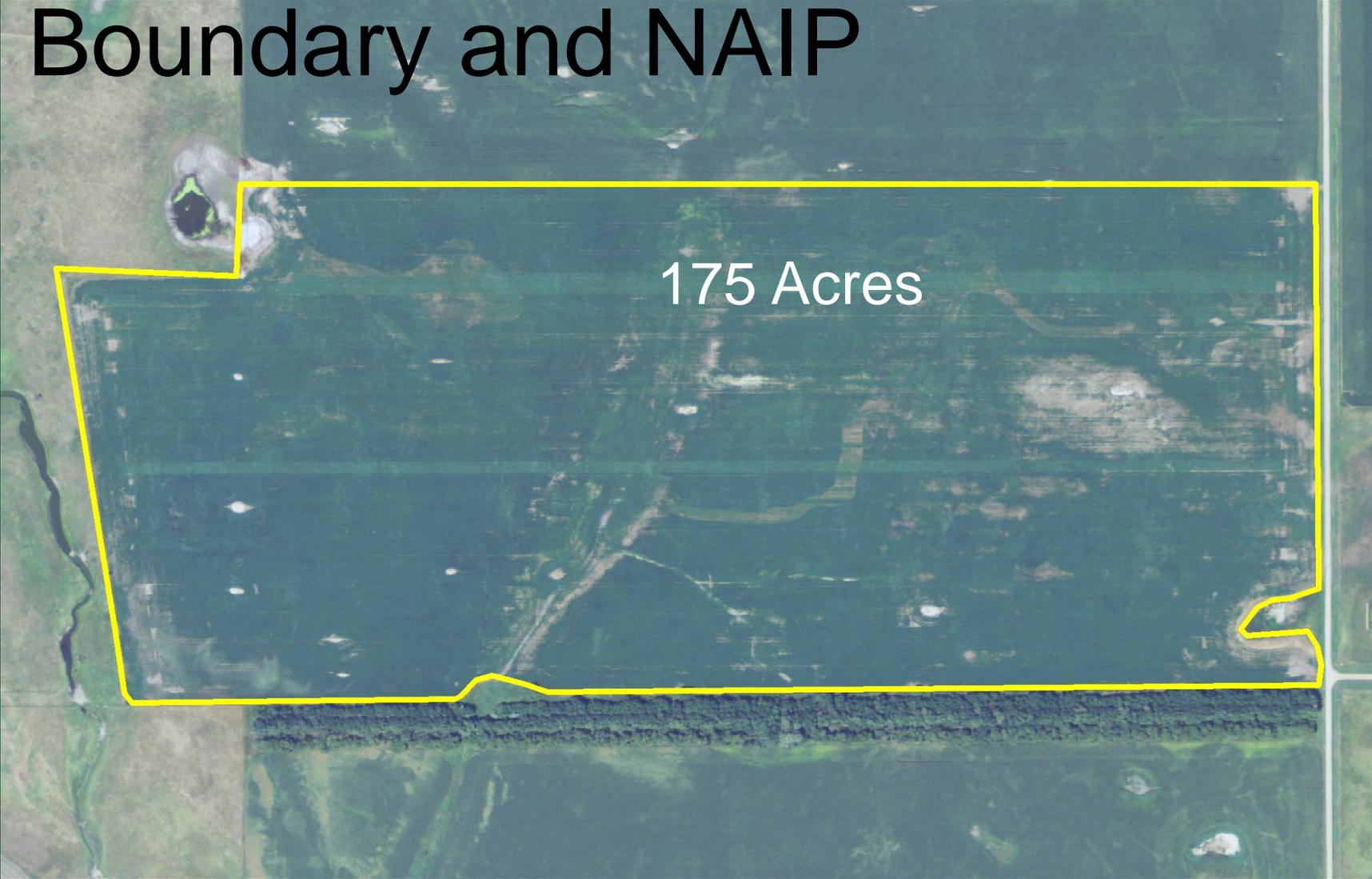
- Collecting
- Cleaning
- Creating Management Zones
- Evaluating

**NDSU** EXTENSION  
SERVICE



Precision Ag  
2017  
North Dakota

# Boundary and NAIP



175 Acres

An aerial photograph showing a large, irregularly shaped area outlined in yellow. The area is predominantly green, suggesting a forest or dense vegetation. The outline follows the natural contours and features of the land, including a small pond in the upper left and a narrow waterway on the left side. The text '175 Acres' is centered within the yellow boundary.

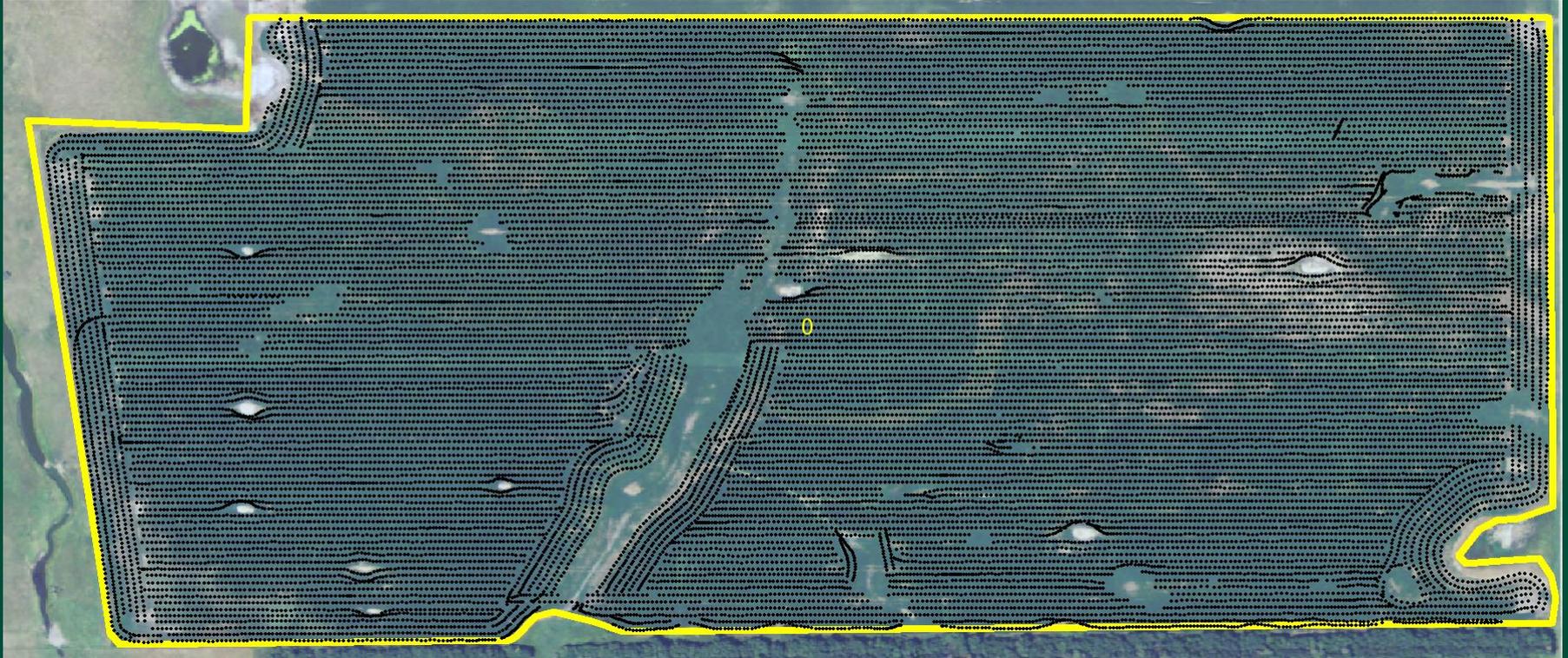
# Calibrating Yield Monitor

- Prior to Harvest
  - Save and Back Up Data
  - Check Sensors: Clean and Not Damaged
  - Check Grain Cart with Scales
- During Operation, Prior To Calibration
  - Check Header Switch
  - Set Row Width

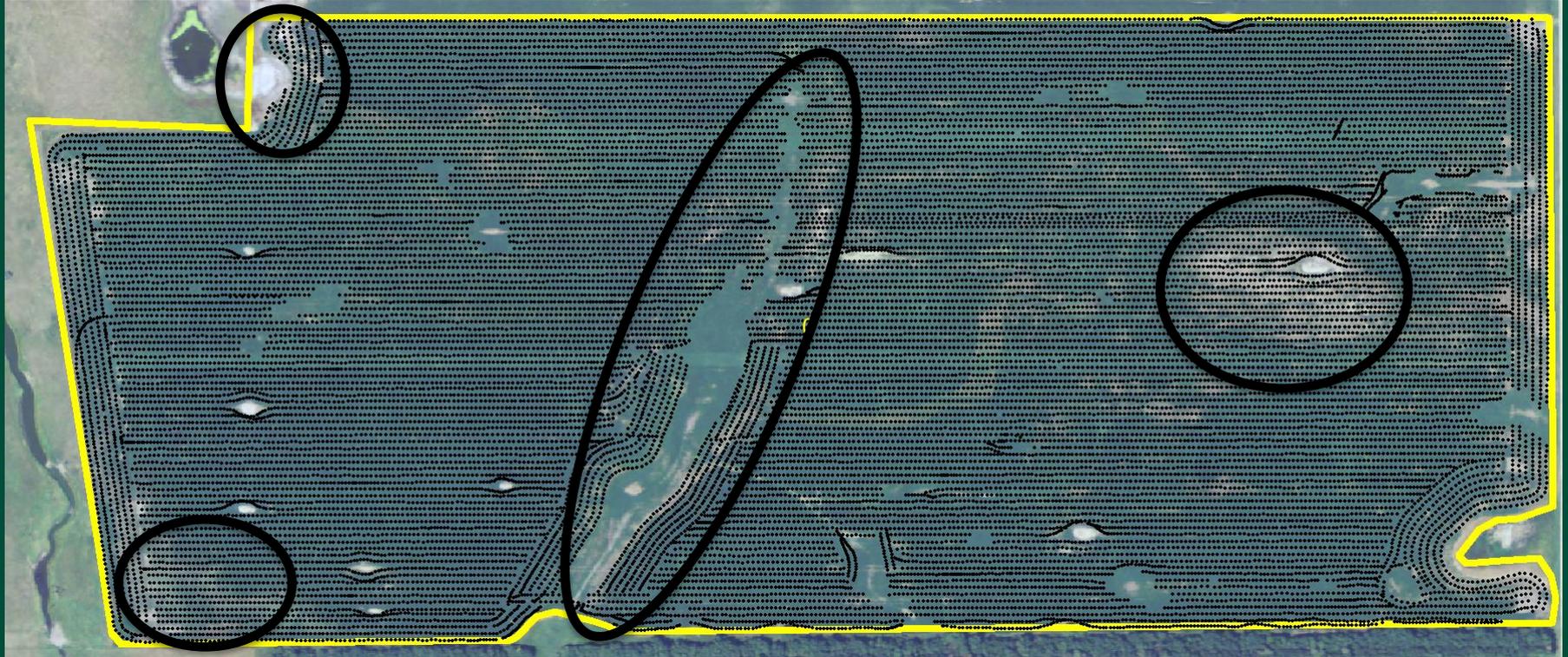
# Calibrating Yield Monitor

- Calibration
  - Mass-flow Sensor/Optical Sensor
  - Temperature
  - Moisture
  - Calibrate for each type of grain
- During Harvest
  - Check Mass-flow Sensor
  - If Operating Two Combines – Work Together

# Yield Data



# Yield Data



# Yield Data - Cleaning



# Cleaning Yield Data

<https://www.ars.usda.gov/research/software/download/>



# Using Yield Editor

Yield Editor

**Load/Import File**      Filtering, Mapping and Editing      Save/Export File

Import AgLeader Advanced or Greenstar Text File

Select Grain Type and Properties

Crop Type	Density	Market Moisture
Corn	56	15.5
Soybean	60	13.0
Sorghum	56	13.0
Wheat	60	13.5

Selected Grain Type and Properties

Corn	56	15.5
------	----	------

Edit Table?

UTM Conversion Settings

UTM Conversion is used here for mapping purposes, and can be exported instead of, or in addition to, geographic coordinates. In the RARE case that a specific UTM zone is required, the forced zone value can be set to achieve the desired projection.

Computed Zone       Forced Zone

Load Filter and Configuration Settings

Help and Links

- 
- 
- 
- 

Automated Options

- No automated filtering.
- Interactive auto/manual filtering.
- Automatic filtering only.

Preview Imported File:

Load Previous Yield Editor Session

Preview Session Log and Notes

Version 2.0.7

# Using Yield Editor

Yield Editor
Filtering, Mapping and Editing
Save/Export File

**Filter Selection**

Use?	Show?	Deleted
<input type="checkbox"/> 0	<input type="radio"/> Flow Delay	0
<input type="checkbox"/> 0	<input type="radio"/> Moisture Delay	0
<input type="checkbox"/> 0	<input type="radio"/> Start Pass Delay	0
<input type="checkbox"/> 0	<input type="radio"/> End Pass Delay	0
<input checked="" type="checkbox"/> 7.7	<input type="radio"/> Max Velocity (mph)	107
<input checked="" type="checkbox"/> 4.7	<input type="radio"/> Min Velocity (mph)	1263
<input type="checkbox"/> 0.2	<input type="radio"/> "Smooth" Velocity	0
<input type="checkbox"/> 120	<input type="radio"/> Minimum Swath (in)	0
<input checked="" type="checkbox"/> 273	<input type="radio"/> Maximum Yield	2207
<input checked="" type="checkbox"/> 130	<input type="radio"/> Minimum Yield	2426
<input type="checkbox"/> 4	<input checked="" type="radio"/> STD Filter	0
<input type="checkbox"/>	<input type="radio"/> Header Down Req	0
<input type="checkbox"/>	<input type="radio"/> Overlap (Auto)	567
<input type="checkbox"/>	<input type="radio"/> Local STD (Auto)	3244
<input checked="" type="checkbox"/> Position Filter		To
Easting	514096	515485
Nothing	5178634	5179268
<input type="checkbox"/> Adjust for Moisture?		Manual Deletes
		0

<F10>  
Apply Filters

**Map and Manual Editor**

Easting (m)	Northing (m)	Yield	Flow	Speed	Moist	Swath	Up/Dn	Nsecs	RmCode	Pass	Point
514260	5178557										

**Zoom Tools**

**Manual Editing Tools**

Display Legend?  
 Symbol Size (m)

<< Advanced

**Yield Statistics**

	Mean	STD	CV	N	Range
Clean	224.46	26.65	11.9	37100	130-273
Raw	224.23	59.24	26.4	42522	0-519

# Export Cleaned Data

 Yield Editor

Load/Import File

Filtering, Mapping and Editing

## Export Data

### Select Output Fields

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> UTM Easting (m)  | <input type="checkbox"/> Moisture (%)         | <input type="checkbox"/> AGL Flag Code   |
| <input checked="" type="checkbox"/> UTM Northing (m) | <input type="checkbox"/> Swath Width (in)     | <input type="checkbox"/> Transect Number |
| <input type="checkbox"/> Longitude (DD)              | <input type="checkbox"/> Travel Distance (in) | <input type="checkbox"/> GPS Time        |
| <input type="checkbox"/> Latitude (DD)               | <input type="checkbox"/> Grain Flow (lb/s)    | <input type="checkbox"/> UTM Zone        |
| <input checked="" type="checkbox"/> Yield            | <input type="checkbox"/> Interval Length (s)  | <input type="checkbox"/> RmCode          |

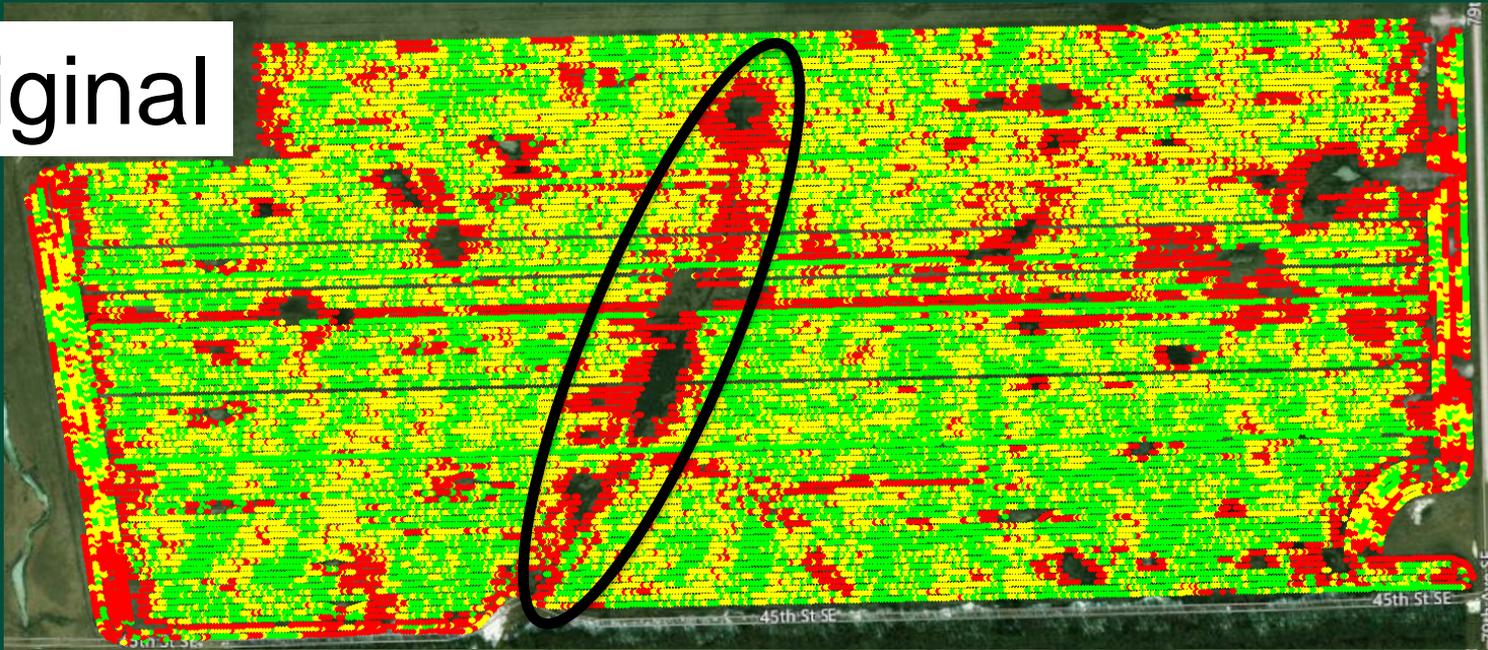
### Formatting

- Comma Delimited ASCII
- Space Delimited ASCII
- Allow Negative Lat/Long?

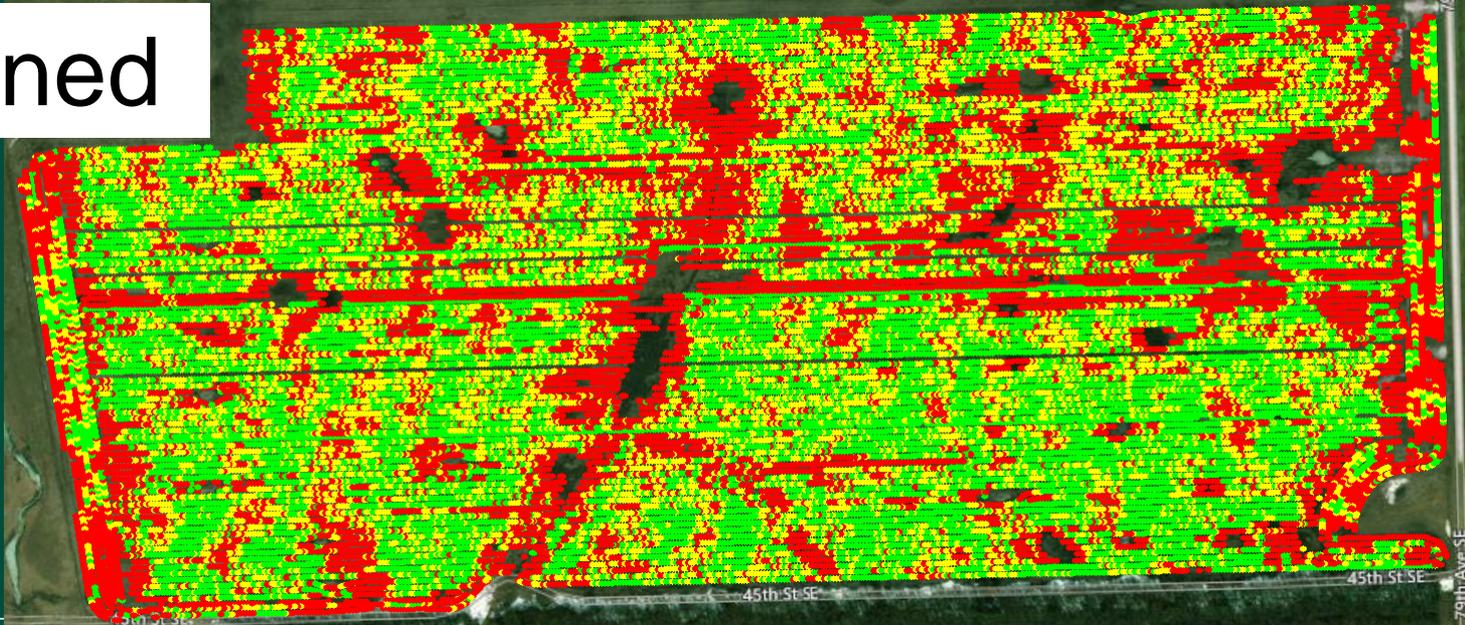
### Point Types to Export

- Export CLEAN points?
- Export SELECTED points?
- Export DELETED points?
- Export ALL points?

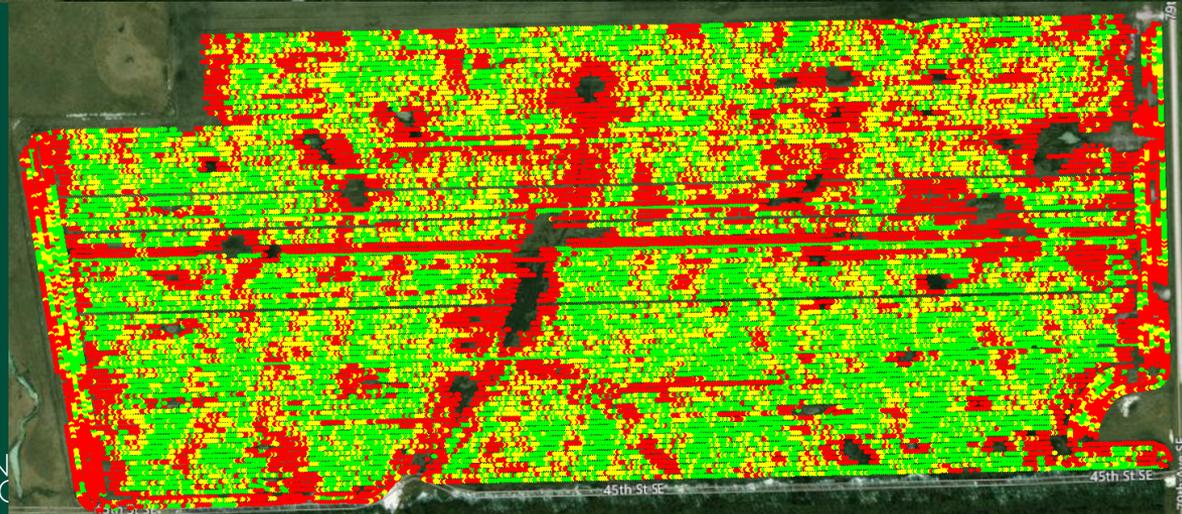
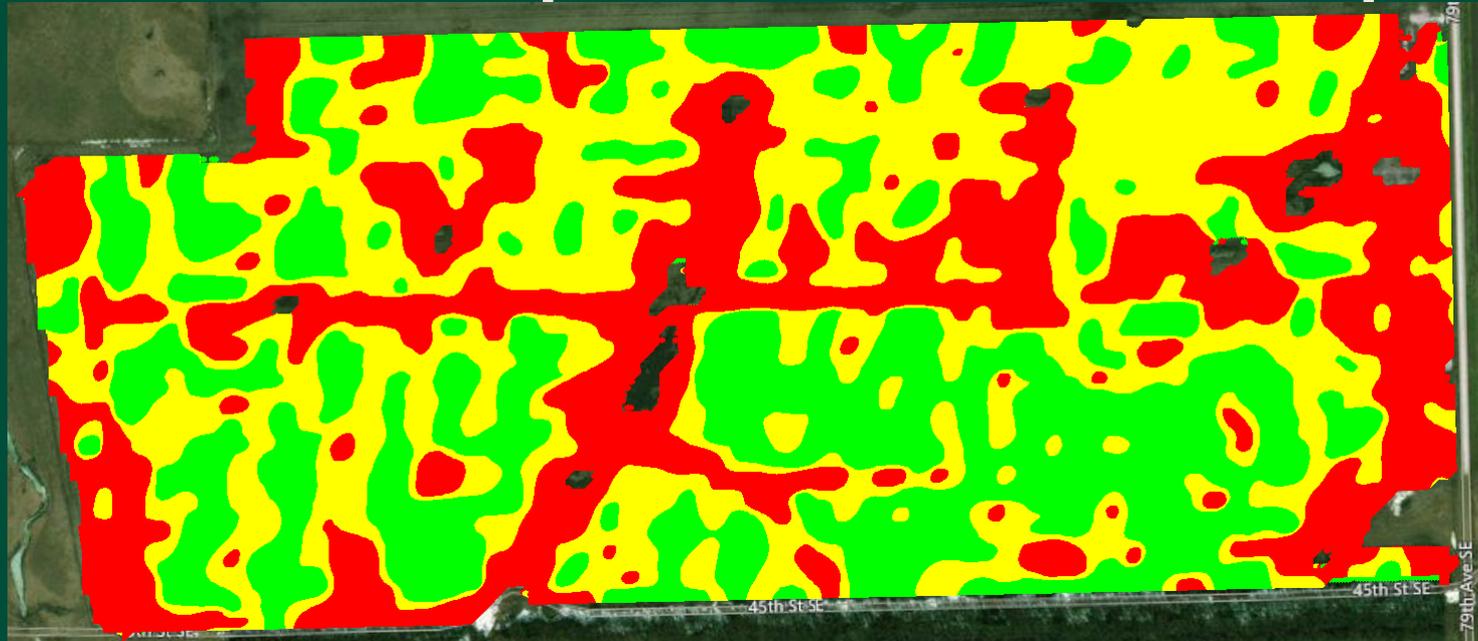
Original



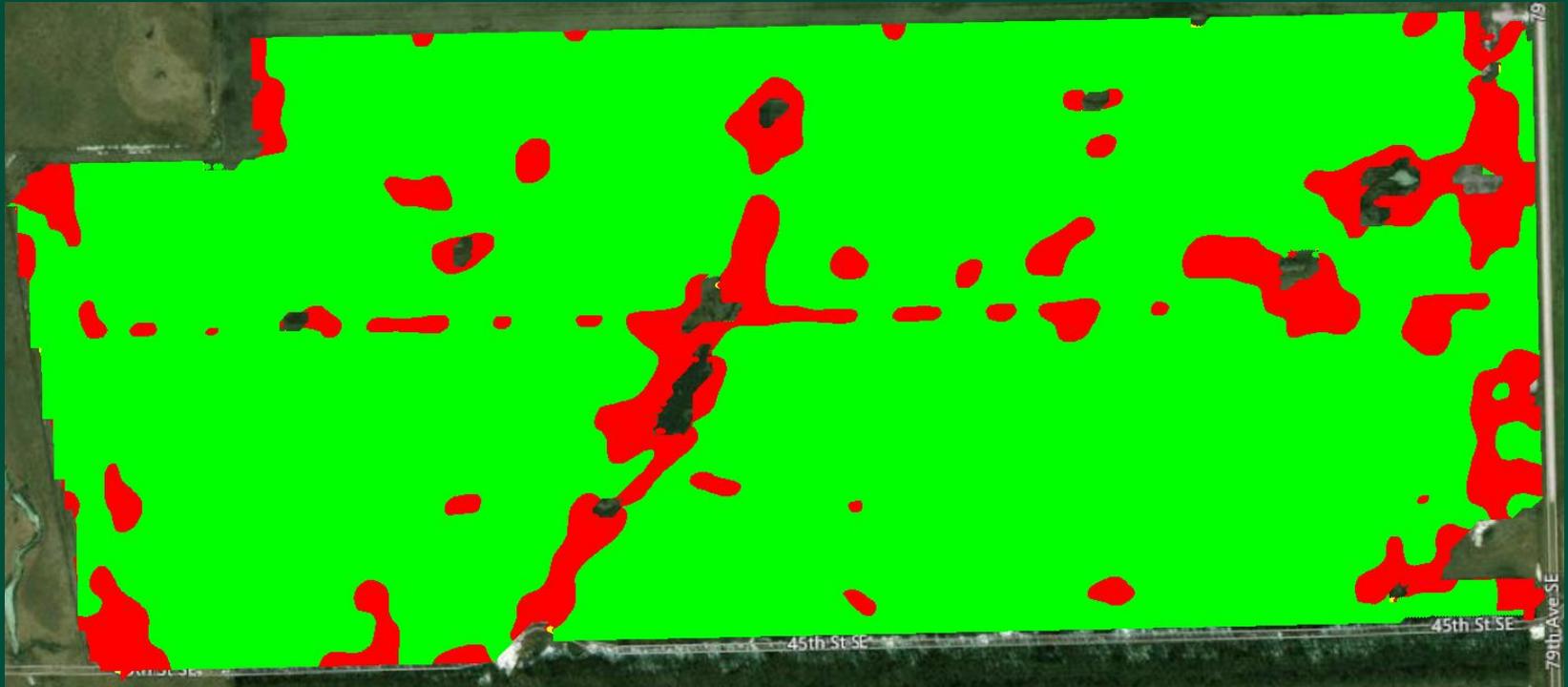
Cleaned



# Zone Map from Yield Map



# Editing Zones

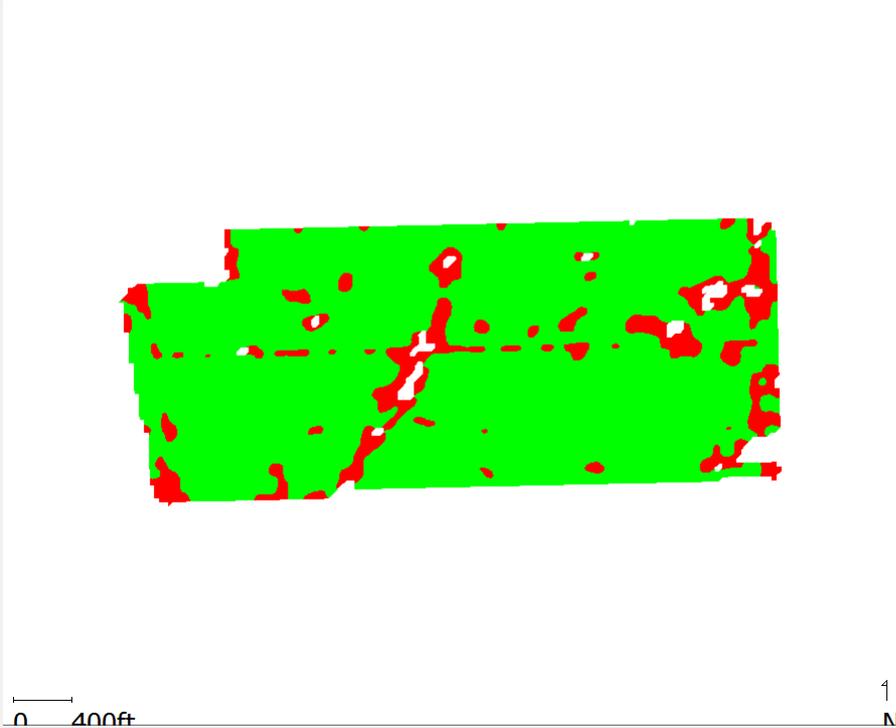


# Exporting Prescription Map

Prescription Reference Layer Selection

Select a layer from the list below to base your prescription off of or None to manually create a prescription data set.

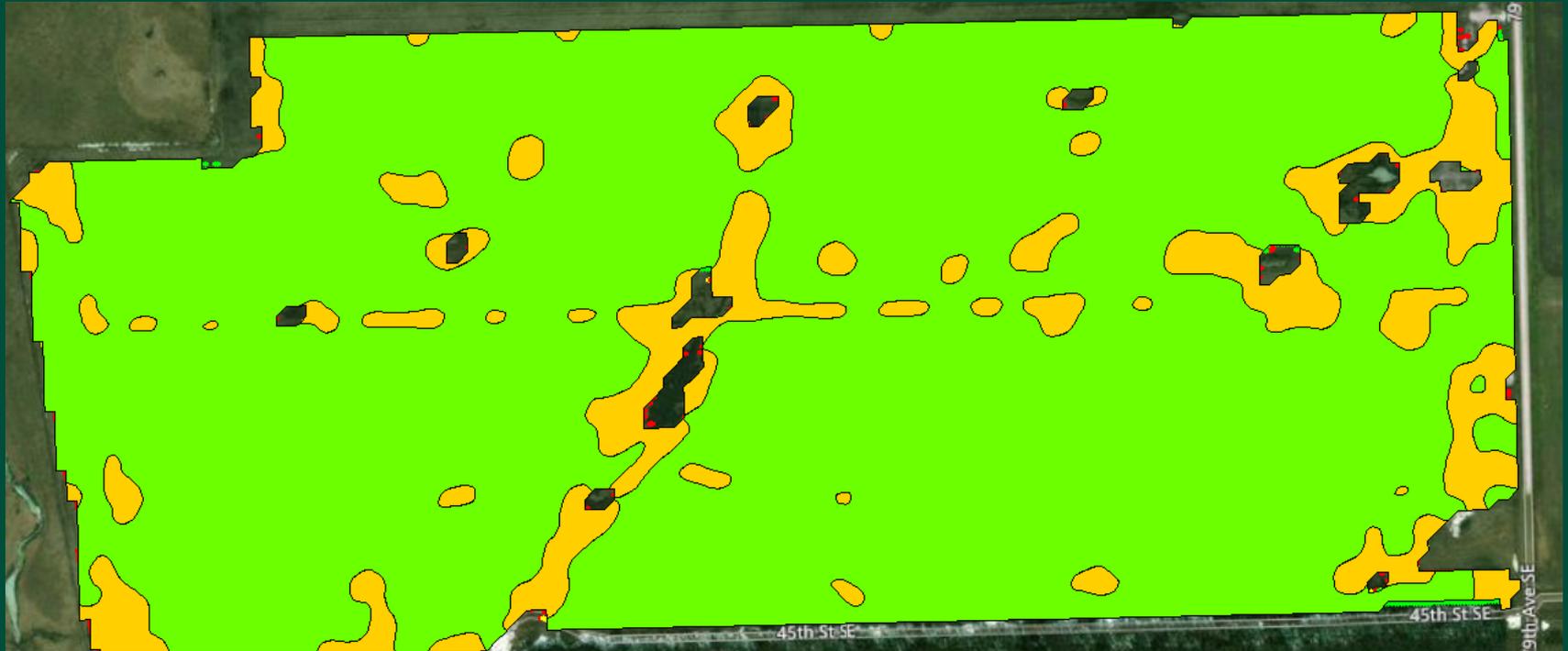
Select Reference Layer 1 - Corn\_2016\_Cleaned.csv | Corn - CORN 1 | NO Ye ▾



0 400ft

1  
N

# Adding Fertilizer Rate to Zones



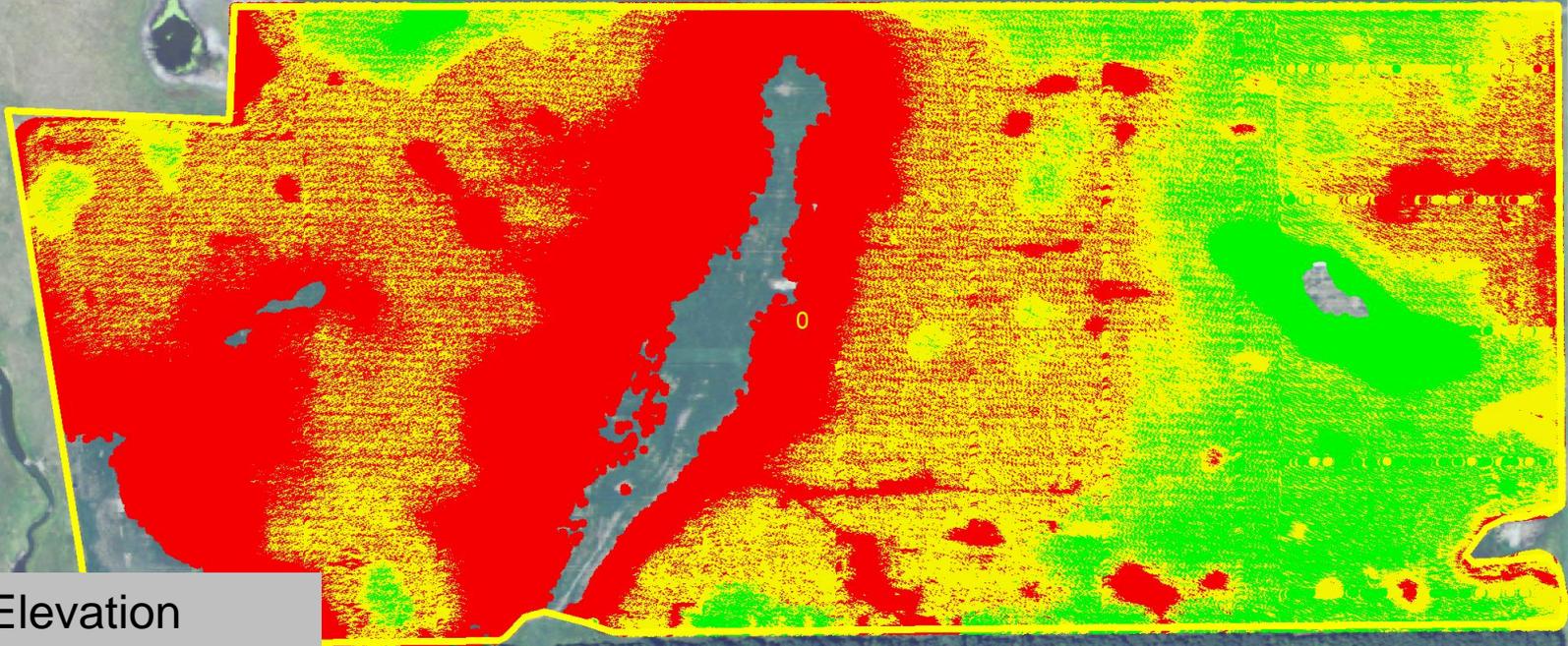
Target Rate (Mass)	
(lb/ac)	
	100.00 (150.11 ac)
	25.00 ( 21.61 ac)

# Digital Crop Data

- Boundaries
- Soils and Soil Properties (pH, Texture, EC)
- Elevation
- Use History
- Soil Test Information
- Crop Input (Tillage, Fertilizer, Variety, Pesticides)
- Remote Sensing
- In-field Sensing
- Yield Data



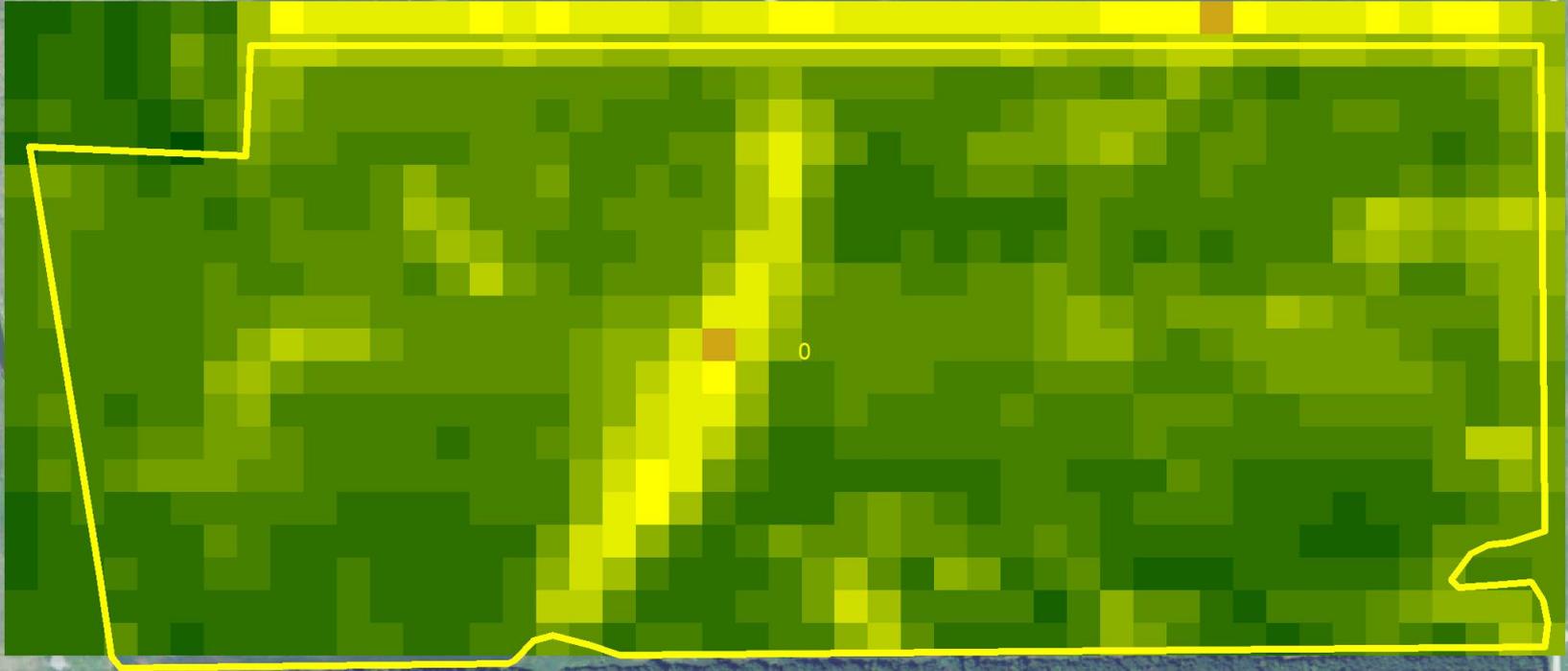
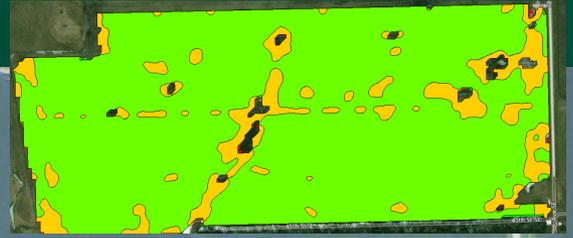
# Elevation (LiDAR)



## Elevation

- 1505 -1509
- 1509 -1550
- 1550 -1552

# NDVI Satellite Image



<https://earthexplorer.usgs.gov/>

# Questions - Comments

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<http://www.ag.ndsu.edu/agmachinery>