ADVANCED NUTRIENT MANAGEMENT TECHNOLOGY & APPLICATION ON-FARM FIELD TRIAL RESULTS

Host Farm: Holsum Dairies

Hilbert, WI

Calumet County 2019

Kapral Agronomy Consulting LLC

CCASA
Calumet County Agriculture Stewardship Alliance

Field and Weather Details

- **Plant Date: June 8, 2019**
- **Manure Application/Cover Crop Seeding Date: June 26, 2019**
- **Harvest Date: October 15, 2019**
- **Average Yield (Adjusted to 65% Moisture): 17.5 ton/acre**
- **Plant to harvest growing degree days: 2,062 GDDs**
- **Total Rainfall (from manure application to harvest): 23.8 inches**

Actual:

- **16.53 wet ton/acre**
- **6.14 dry ton/acre**
- **63% average moisture**

As a result of the extreme wetness this year and variability of the field conditions, we were unable to determine if the various application techniques resulted in significant yield differences. However, the *amount* of nitrogen/manure applied to the sections had an impact the yield. Please read through the following general observations and review the maps.

*Note how the soil type and elevation impacted yield

Observations and Variabilities

- **Traditional Angle Drag Hose Plots:** While it does not show up on the yield map, we noticed that running row crop duals created less crop damage than running LSW tires. These observations were noted from manual hand checks and drone footage.

LSW Tires

Row Crop Duals

Observations and Variabilities

- **Cover Crop Plots:** There was cover crop germination in the plots that had the cover crop seed broadcasted by the co-op ***before*** manure injection. However, nothing germinated from the plot that had the cover crop seed injected ***with*** the manure. This could have possibly resulted from it being injected too deep with the manure.

September 9

October 10

October 15 (Harvest)

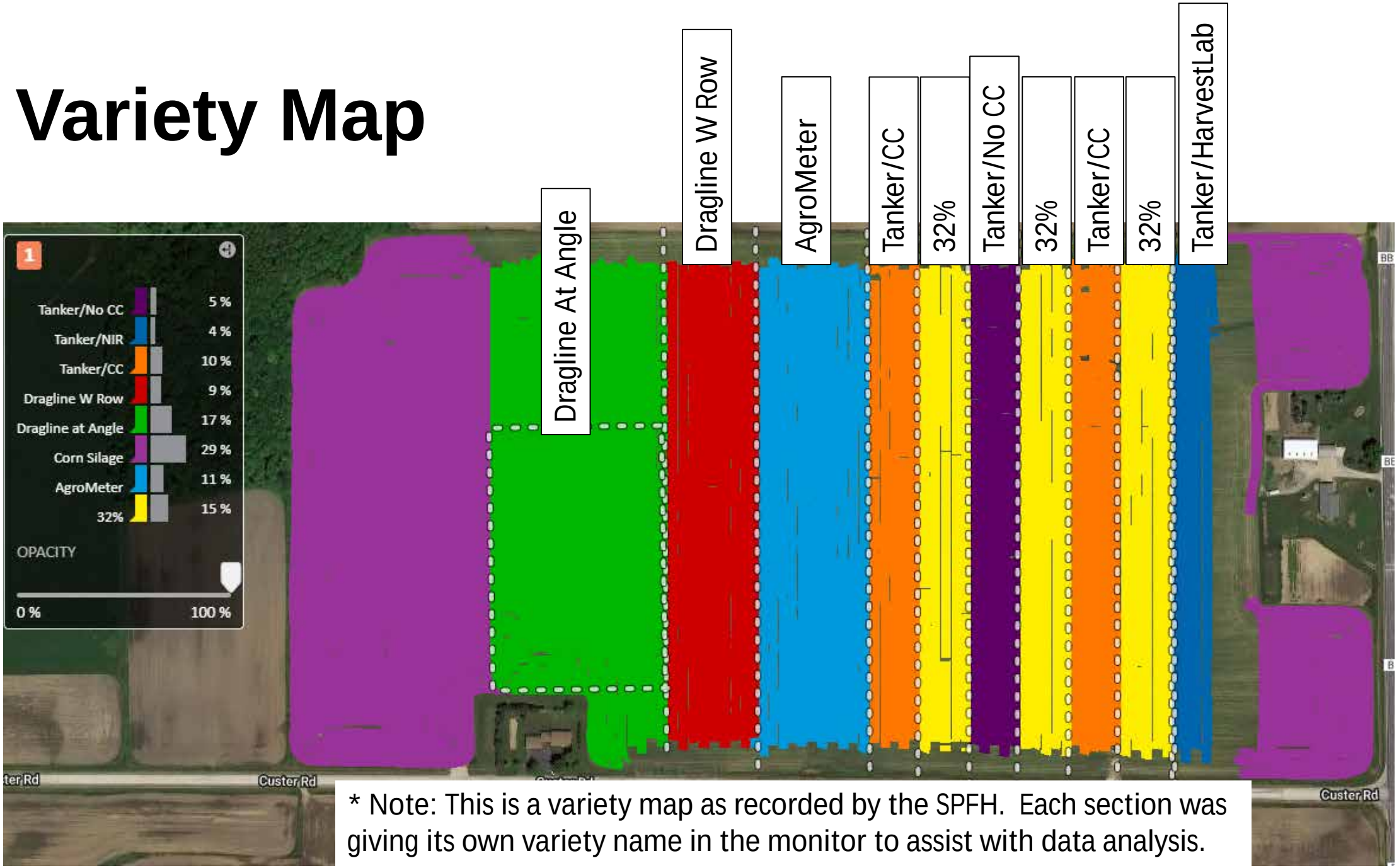
Observations and Variabilities

- **Available Nitrogen**: Due to changes in the manure components from sample date to application date, all manure sections except for Section 1 received less than 50# of available N compared to approximately 75# in the 32% application strips. Using the real-time ManureSense, Section 1 received approximately 80# of available N (160 total). This did impact the yield.

The Advanced Nutrient Management Technology and Application project was NOT performed to valid research standards. It was an on-farm demonstration trial testing various manure application methods and collecting data for farmers, custom operators, and other ag industry folks to draw their own conclusions on the results.

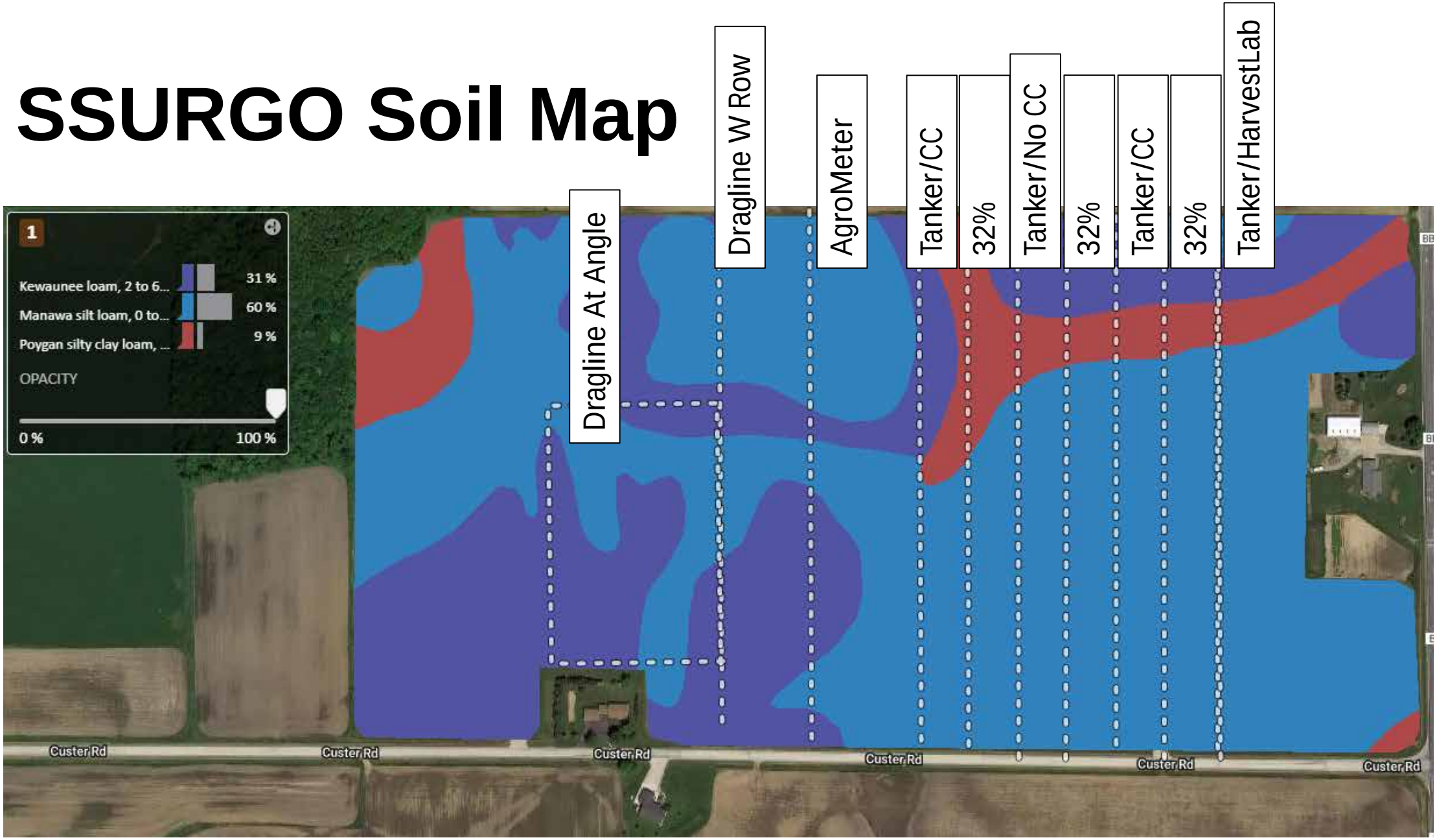
We are planning on continuing parts of this project again in 2020, but only doing two application methods covering more acres. This will hopefully reduce the issue of yield variability resulting from field condition variability.

Variety Map

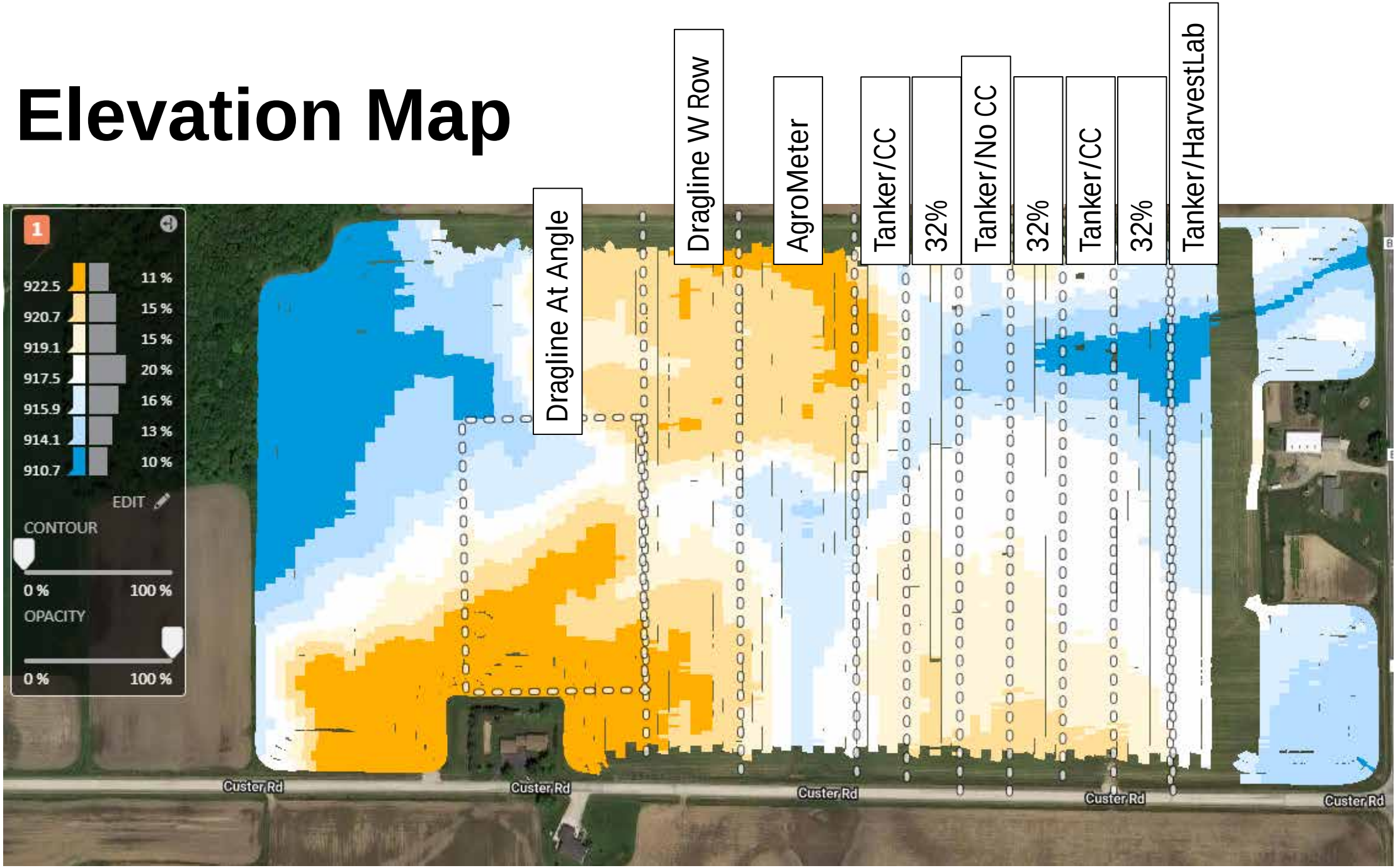


* Note: This is a variety map as recorded by the SPFH. Each section was giving its own variety name in the monitor to assist with data analysis.

SSURGO Soil Map



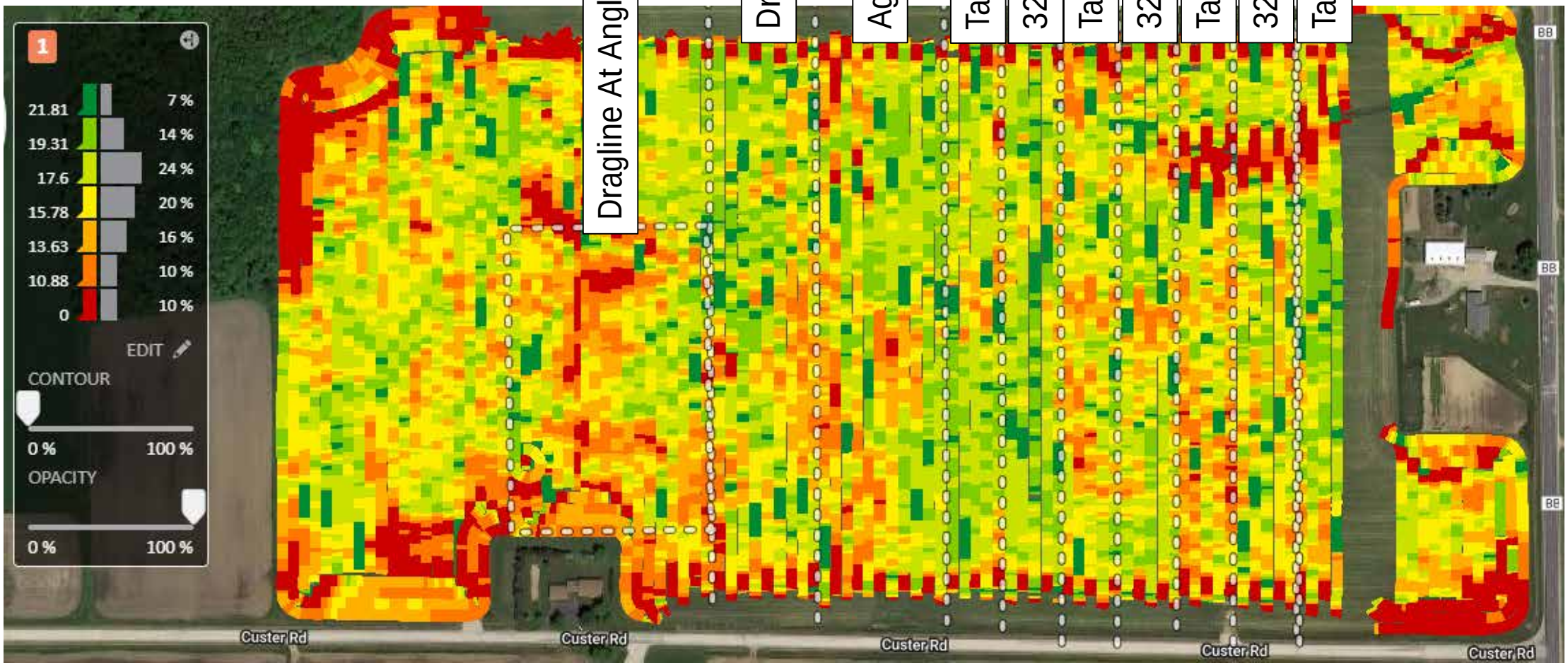
Elevation Map



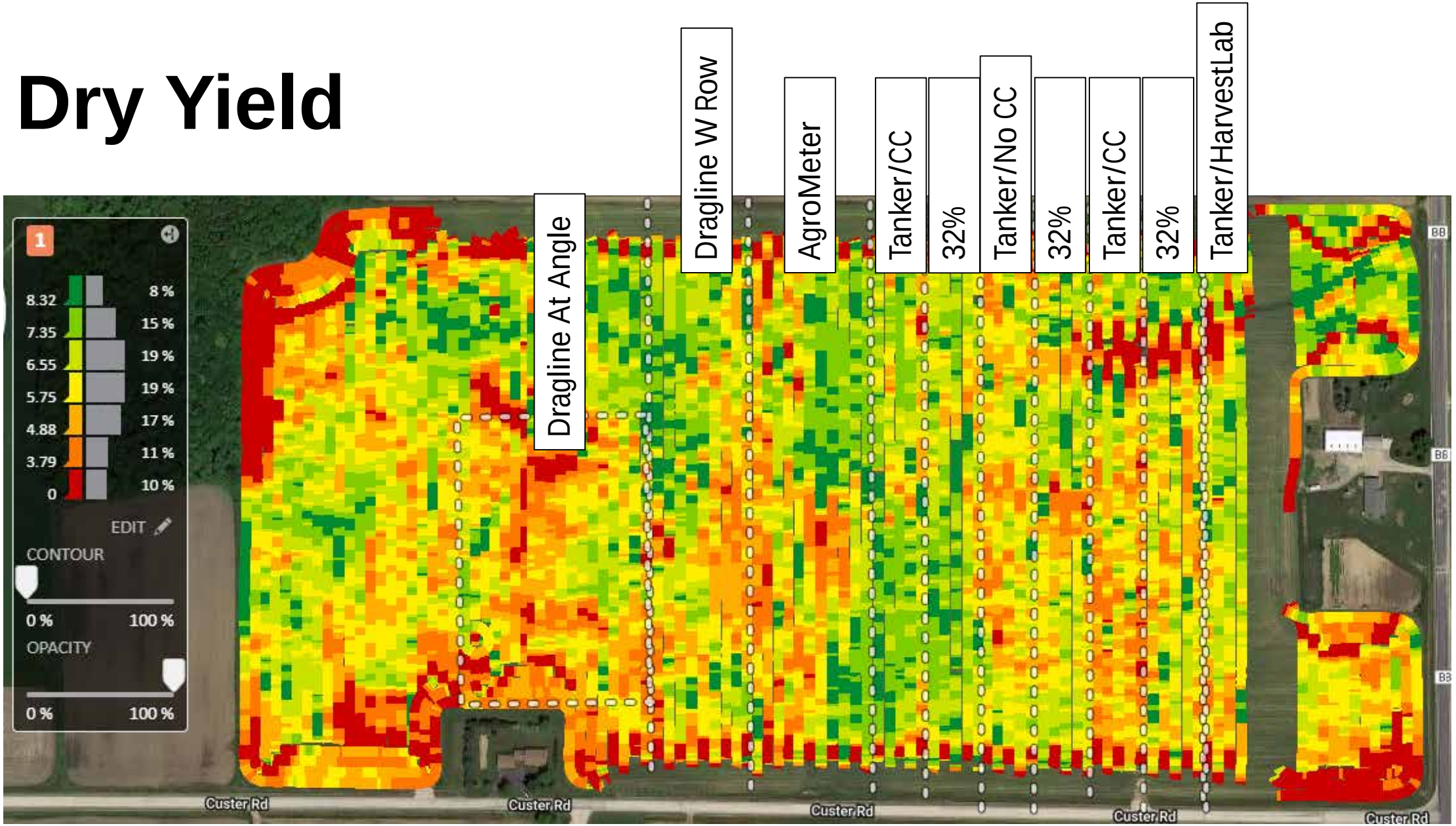
Section Overview

- Tanker/HarvestLab: Tanker, No Cover Crops, John Deere HarvestLab 3000 with ManureSense Target of 160lbs Total N
- 32%: 32% UAN applied at 25 GPA
- Tanker/CC: Tanker, Cover Crops, 8,000 GPA Target
- Tanker/No CC: Tanker, No Cover Crops, 8,000 GPA Target
- Tanker/CC: Tanker, Cover Crops, 8000 GPA Target
- AgroMeter: AgroMeter from Vanderloop Equipment, 8000 GPA Target
- Dragline W Rows: Bazooka Toolbar with Dragline with the rows, 8,000 GPA Target.
- Dragline At Angle: Dragline at Angle – did not separate between which application method. 8000 GPA Target.
- Corn Silage: 32% UAN at 25 GPA – not part of test

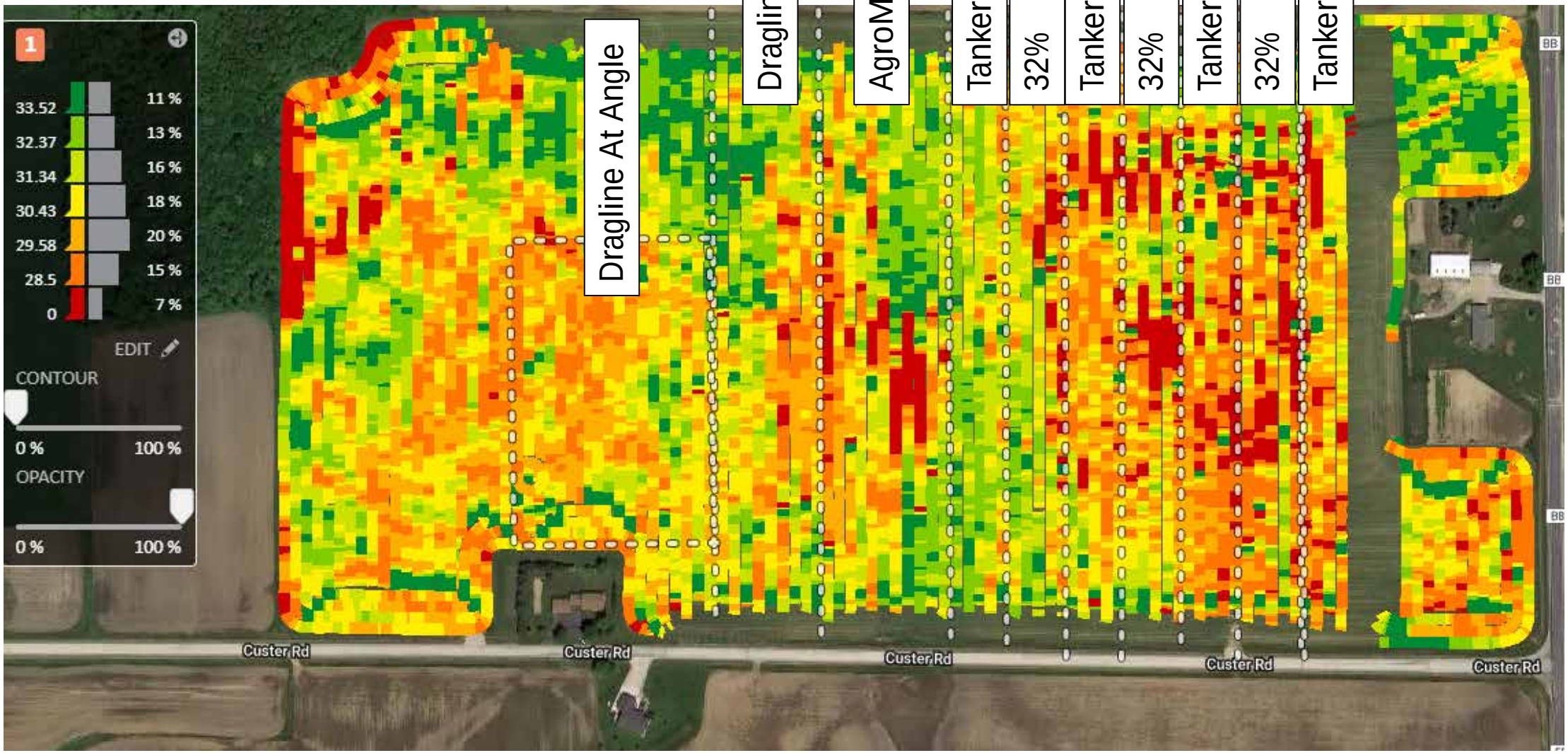
Wet Yield


Dragline At Angle
Dragline W Row
AgroMeter
Tanker/CC
32%
Tanker/No CC
32%
Tanker/CC
32%
Tanker/HarvestLab
1
21.81
19.31
17.6
15.78
13.63
10.88
0
7 %
14 %
24 %
20 %
16 %
10 %
10 %
EDIT
CONTOUR
0 %
100 %
OPACITY
0 %
100 %
Custer Rd
Custer Rd
Custer Rd
Custer Rd
Custer Rd
BB
BB
BB

Dry Yield

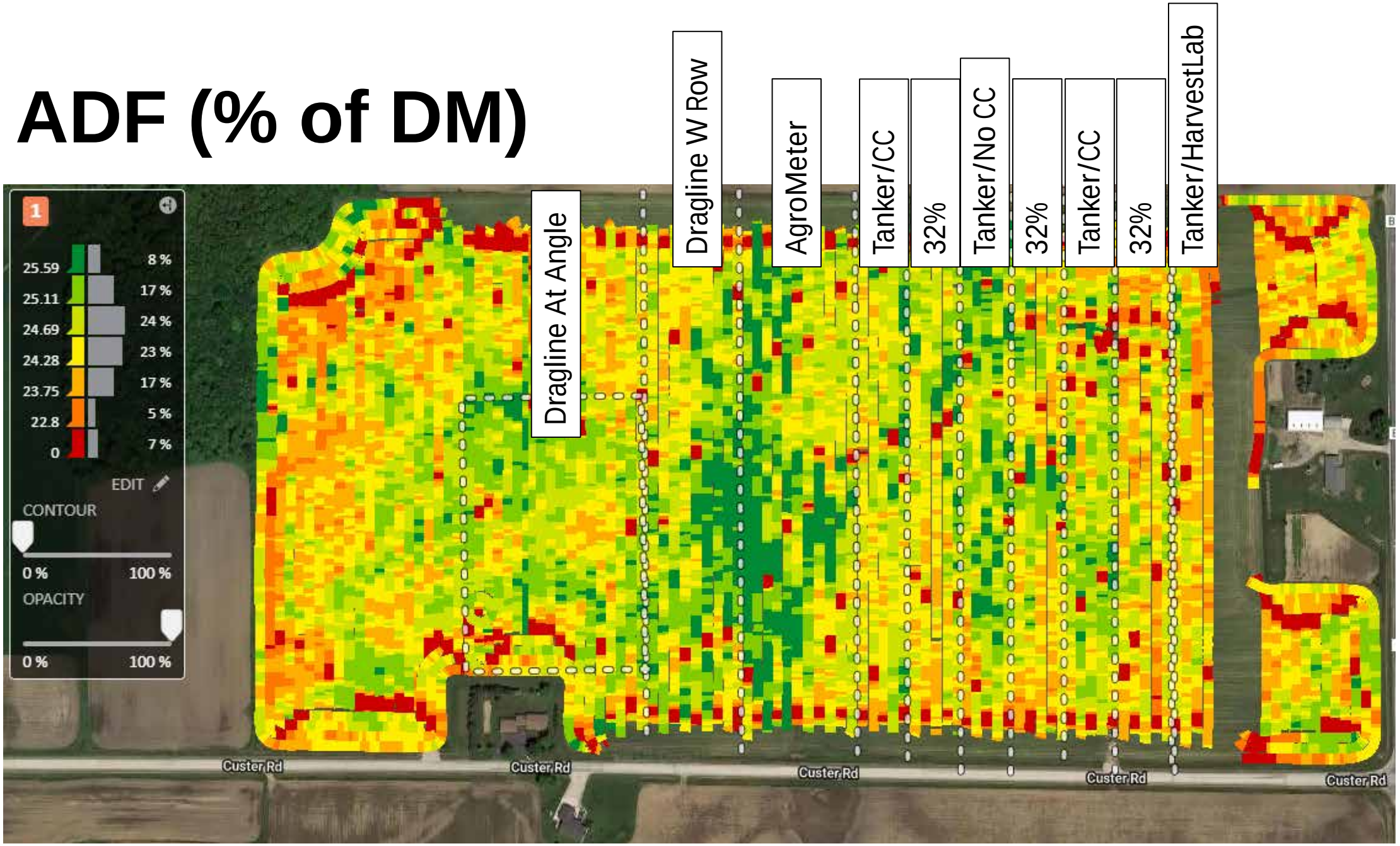

1
8.32
7.35
6.55
5.75
4.88
3.79
0
8 %
15 %
19 %
19 %
17 %
11 %
10 %
EDIT
CONTOUR
0 %
100 %
OPACITY
0 %
100 %
Dragline At Angle
Dragline W Row
AgroMeter
Tanker/CC
32%
Tanker/No CC
32%
Tanker/CC
32%
Tanker/HarvestLab
Custer Rd
Custer Rd
Custer Rd
Custer Rd
Custer Rd
BB
BB
BB

Starch (% of DM)

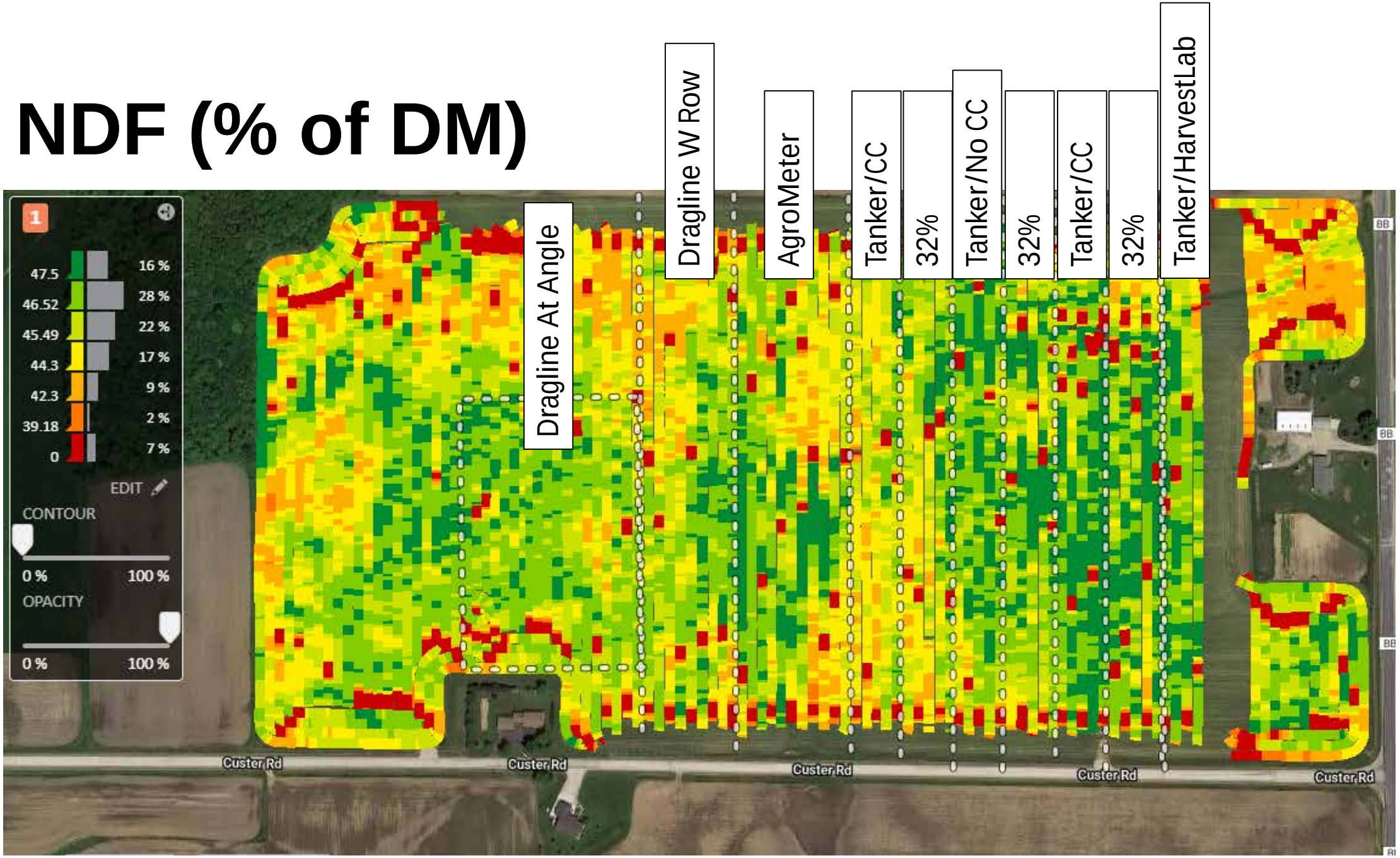

1
33.52
32.37
31.34
30.43
29.58
28.5
0
11 %
13 %
16 %
18 %
20 %
15 %
7 %
EDIT
CONTOUR
0 %
100 %
OPACITY
0 %
100 %
Dragline At Angle
Dragline W Row
AgroMeter
Tanker/CC
32%
Tanker/No CC
32%
Tanker/CC
32%
Tanker/Harvestlab
Custer Rd
Custer Rd
Custer Rd
Custer Rd
Custer Rd
BB
BB
BB

Crude Protein (% DM)

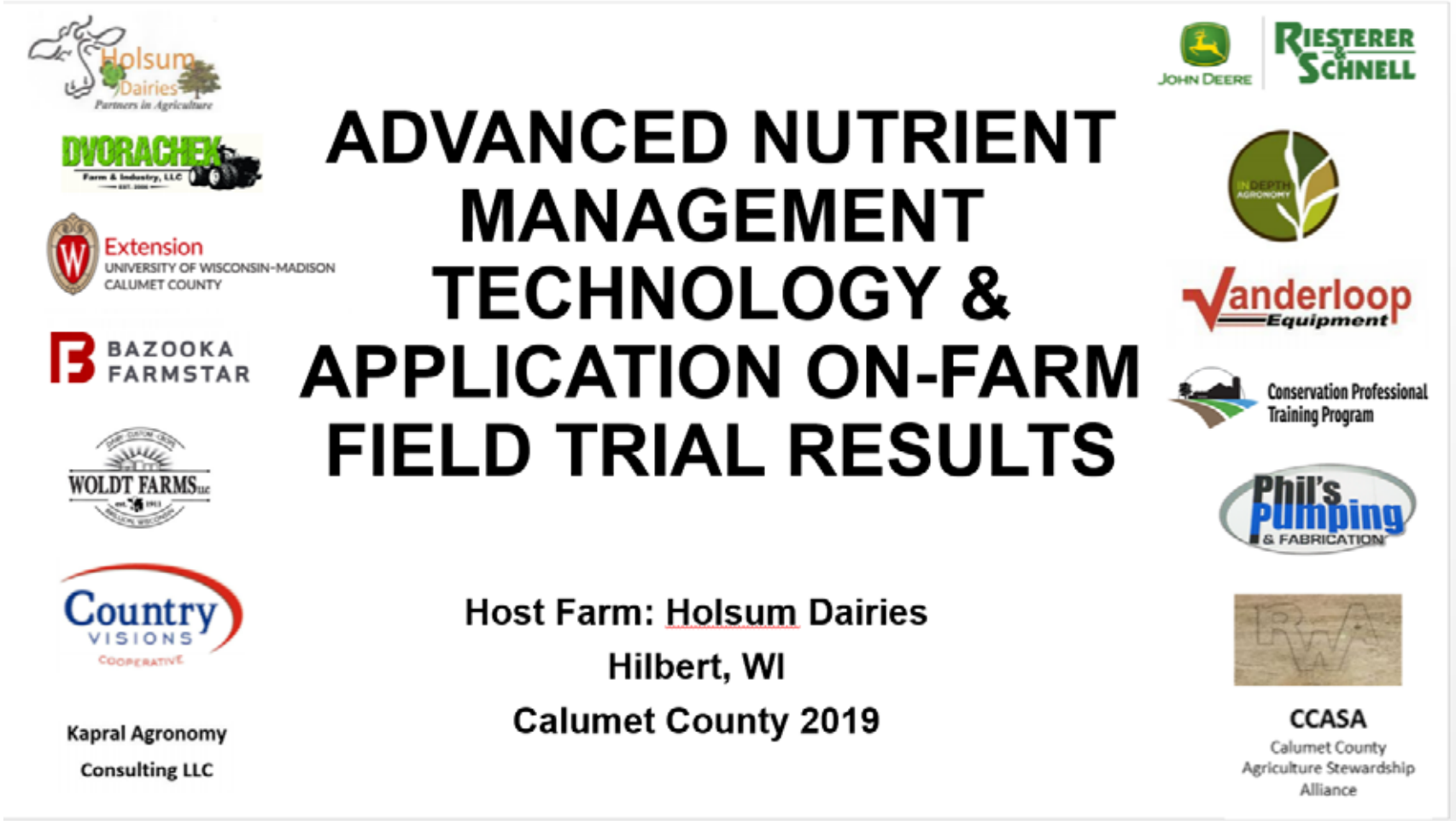
ADF (% of DM)


1
25.59
8 %
25.11
17 %
24.69
24 %
24.28
23 %
23.75
17 %
22.8
5 %
0
7 %
EDIT
CONTOUR
0 %
100 %
OPACITY
0 %
100 %
Dragline At Angle
Dragline W Row
AgroMeter
Tanker/CC
32%
Tanker/No CC
32%
Tanker/CC
32%
Tanker/HarvestLab
Custer Rd
Custer Rd
Custer Rd
Custer Rd
Custer Rd

NDF (% of DM)


1
47.5
16 %
46.52
28 %
45.49
22 %
44.3
17 %
42.3
9 %
39.18
2 %
0
7 %
EDIT
CONTOUR
0 %
100 %
OPACITY
0 %
100 %
Dragline At Angle
Dragline W Row
AgroMeter
Tanker/CC
32%
Tanker/No CC
32%
Tanker/CC
32%
Tanker/HarvestLab
Custer Rd
Custer Rd
Custer Rd
Custer Rd
Custer Rd
BB
BB
BB

Thanks to the Sponsors of This Project



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