



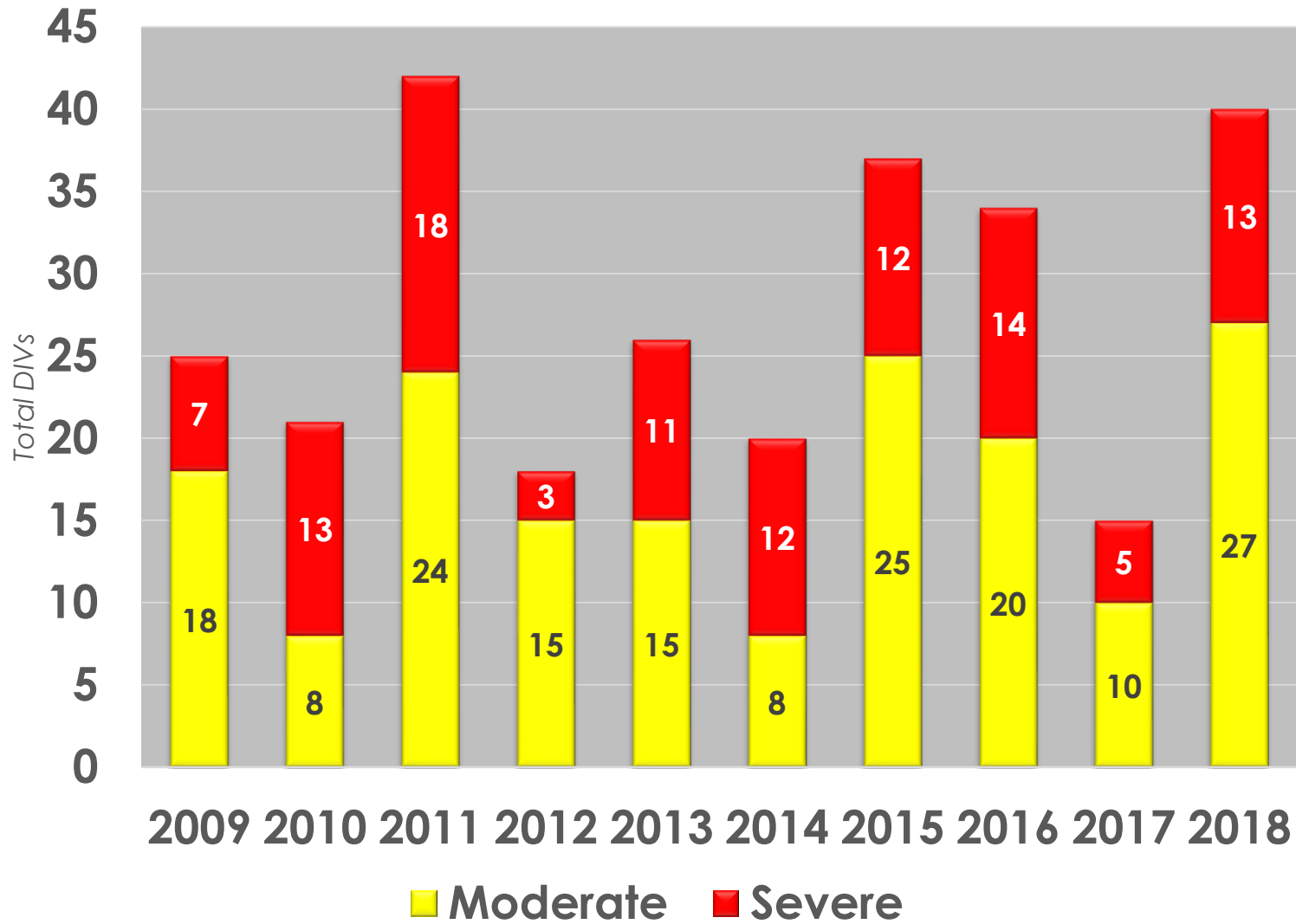
# **Cercospora Control 2019**

**Mike Metzger**

**Research Agronomist**

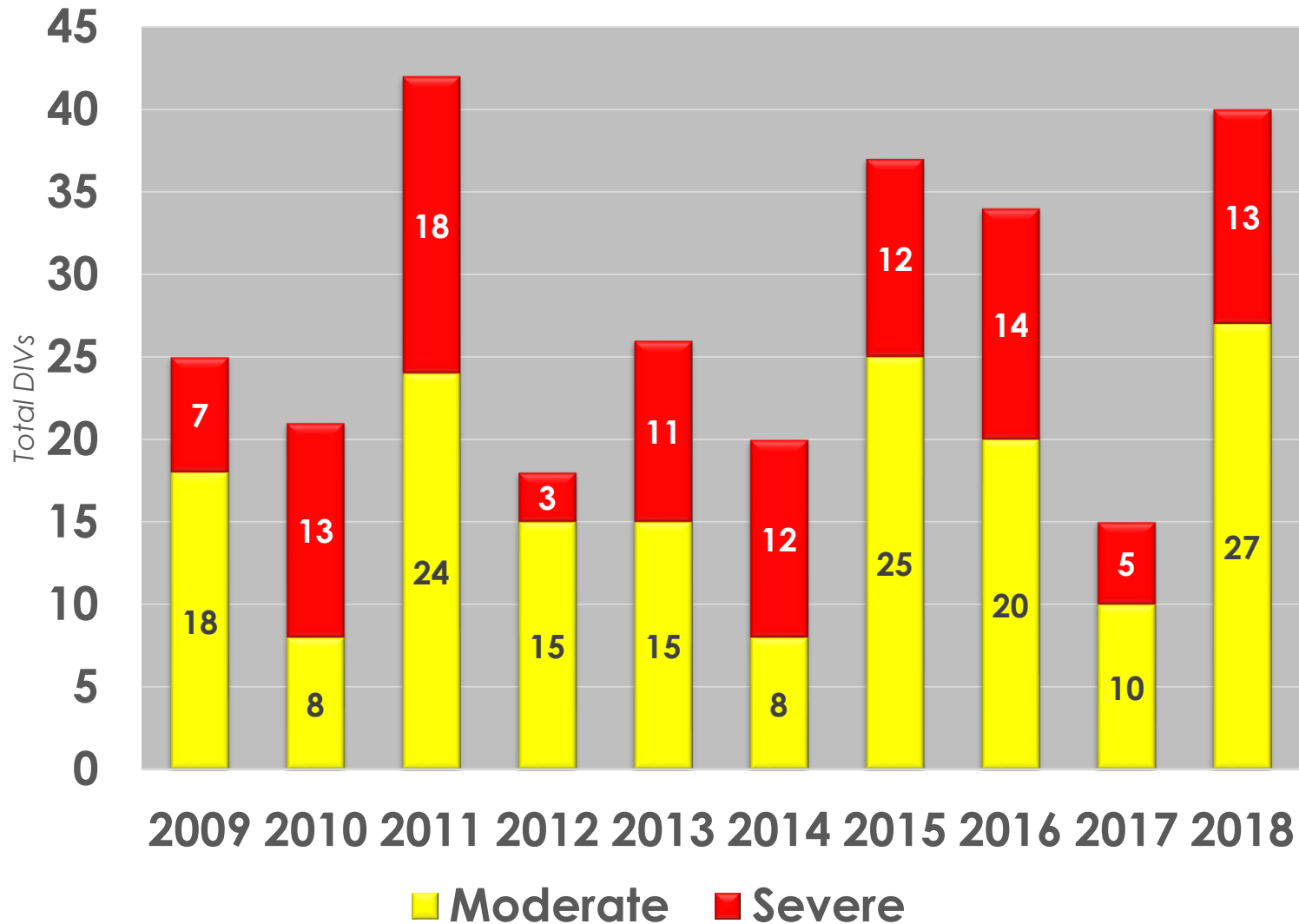
**Minn-Dak Farmers Cooperative**

# NDAWN – DIV (Wahpeton)



**Commercial Field  
2018**

# NDAWN – DIV (Wahpeton)



2018 was the second highest of the past decade

2011 was highest, but we still had the strobilurin fungicides

Most "Moderate" days of the past decade

Majority of those occurred in September

Growers who didn't spray past Labor Day were severely affected

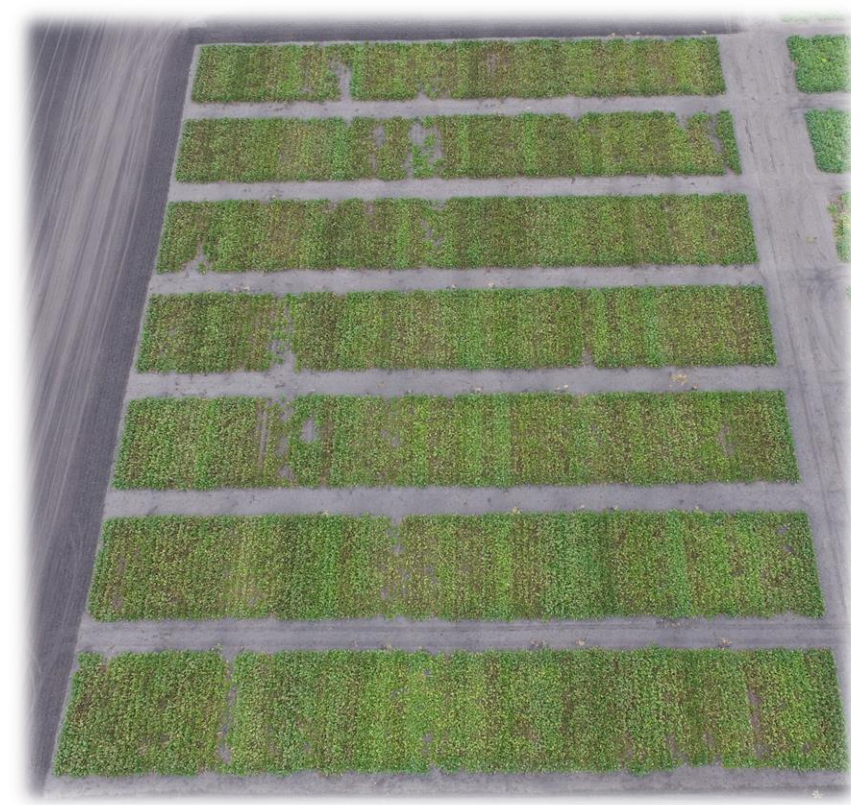
Commercial Field  
2018

# CLS Strategy – Improve Control

- We will focus on four key platforms to try and improve control in 2019 and beyond:
  - Seed varieties
  - Available chemistries
  - Surgical approach to grower recommendations
  - Local industry agronomic alignment

# Seed Varieties

- We have concluded meetings with all sugarbeet genetic suppliers
  - Exciting material on the near horizon
- Lower CLS Approval Criteria
- Established a CLS Specialty category



2016 – (2) varieties ~ 50% of planted acres = Ave Rating of 4.60

2017 – (2) varieties ~ 50% of planted acres = Ave Rating of 4.28

2018 – (2) varieties ~ 50% of planted acres = Ave Rating of 4.14

2019 – (3) varieties ~ 50% of planted acres = Ave Rating of 4.00

# Seed Varieties



- Every 0.75 decrease in rating = 1 less fungicide application
- The new material on the horizon has an average rating of 3.0
  - Significant step change
- We are hoping to have some of the new varieties in our trials this year
  - Limited quantities *maybe* available in 2020
  - Full availability in 2021

# CLS Strategy – Improve Control



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# The Last Three Growing Seasons...





# The Last Three Growing Seasons...



# 2019 MDFC Fungicide Program...

1. **TPTH + ManKocide (or Copper)**
2. **Inspire + Copper**
3. **TPTH + EBDC**
4. **Proline + Copper**
5. **TPTH + EBDC**
6. **Copper (High Rate)**

*Keep fungicide applications to a 10-12 day spray interval  
(tighter if rain and/or DIVs require such)*

# Tank-mixing at Work...

1. Tin
2. Triazole
3. Tin
4. Triazole
5. Tin



1. Tin + Topsin
2. Triazole + Copper
3. Tin + EBDC
4. Triazole + EBDC
5. Tin + Copper

7,298 lbs/A

9,125 lbs/A

# Tank-Mix Partners...

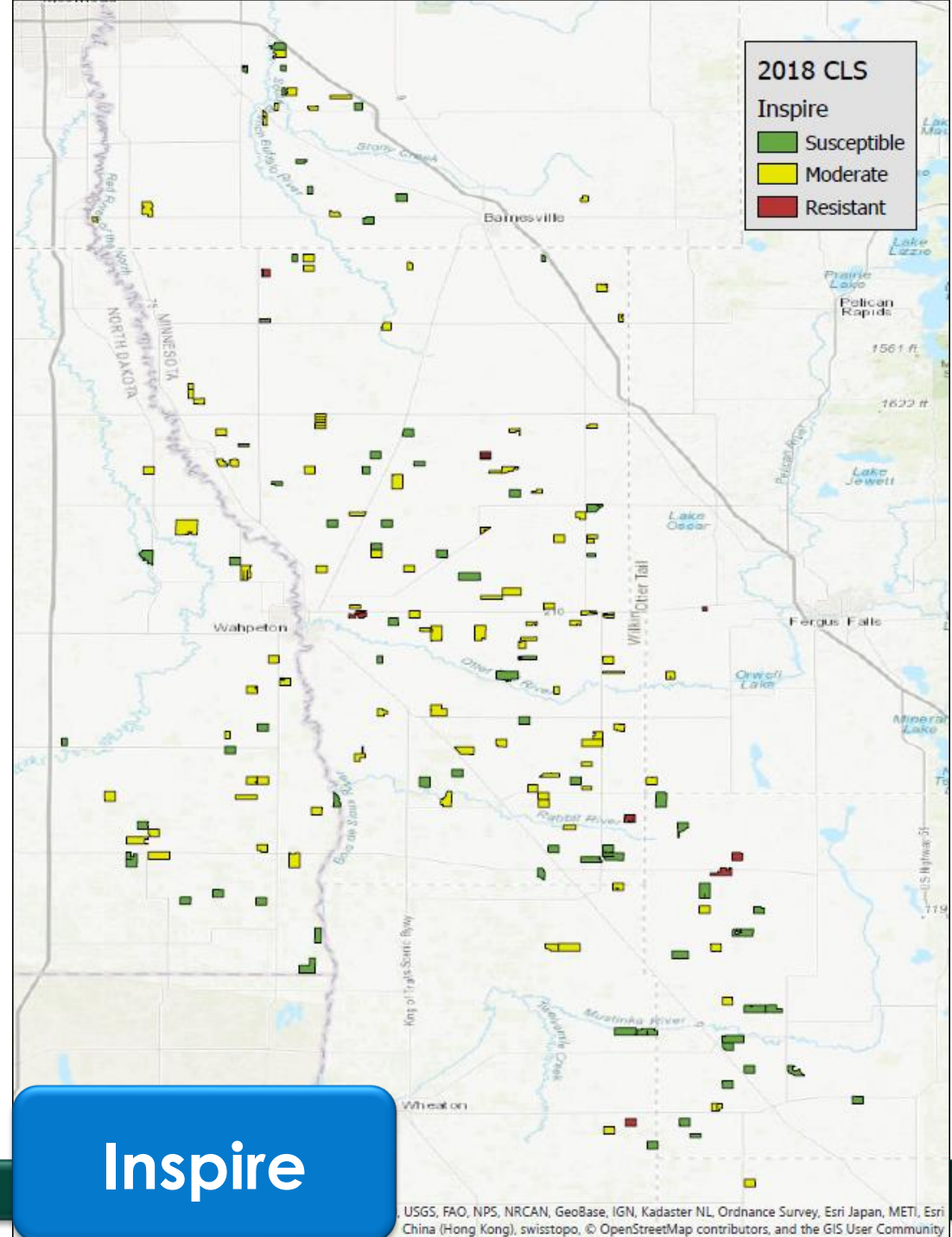
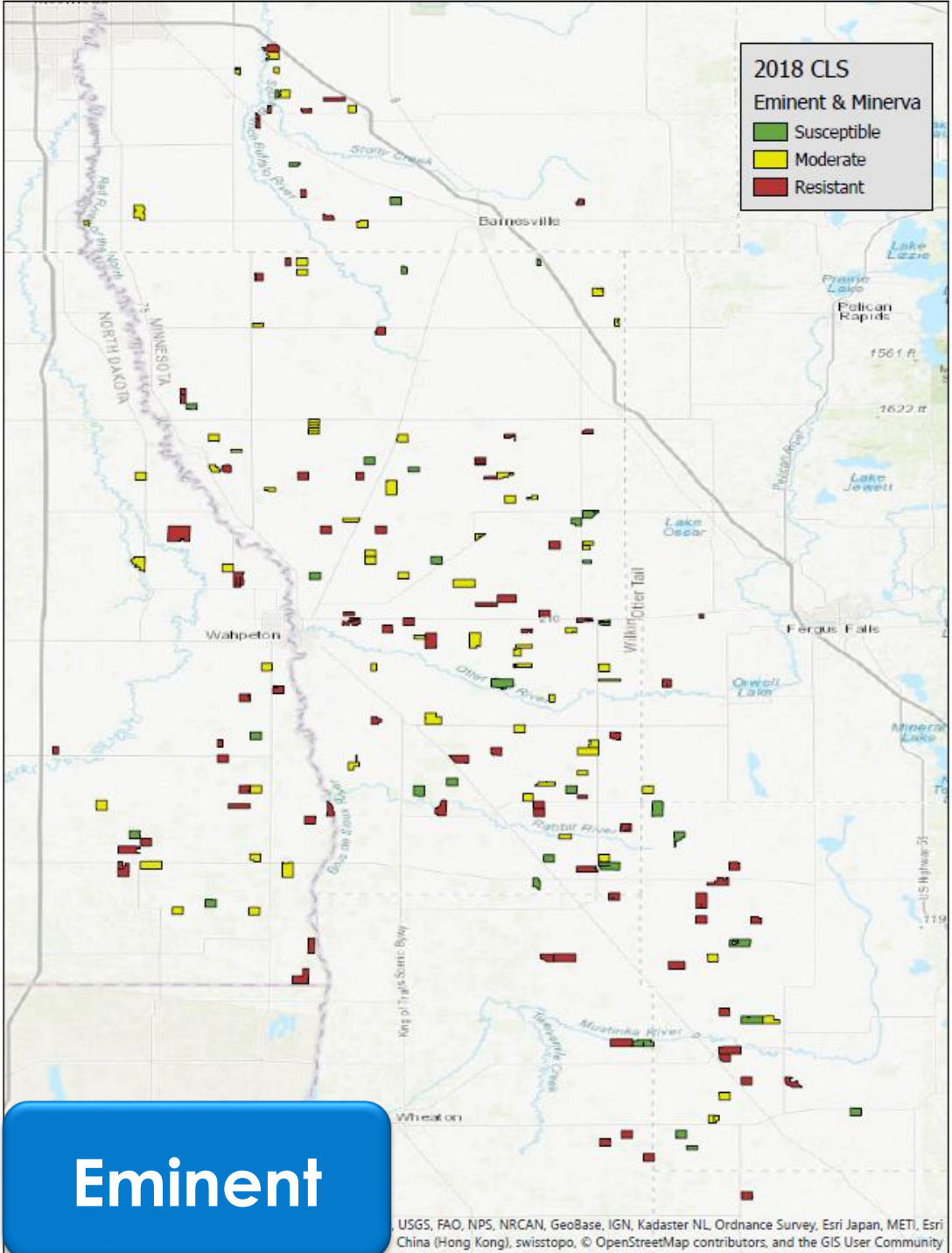
- EBDC (Dithane/Maneb/Mancozeb)
  - Dry formulations (Wettable Powder & Dry Flowable)
  - Liquid formulations
- Copper
  - Dry Flowable and Liquid (F & SC)
  - Cu-Hydroxide and Cu-Oxychloride formulations are most effective
    - Badge SC (Hyd/Oxy), Kocide (Hyd) and Champ (Hyd)
  - Cu-sulfate may be less effective
    - Cuprifix Ultra
    - MasterCop
- All fungicide applications **MUST** have a tank-mix partner

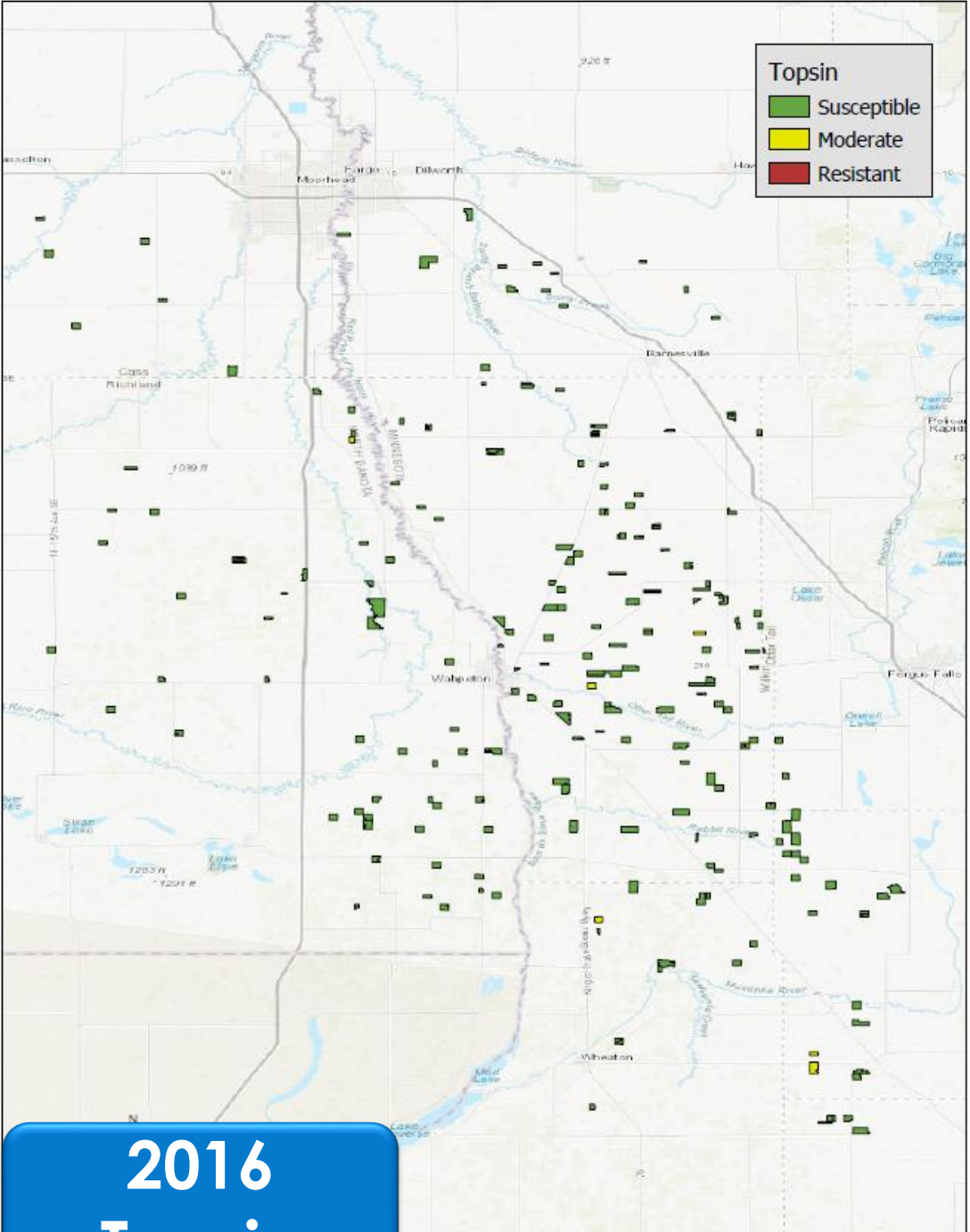
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# CLS Sampling Results

- Conducted each fall after the final fungicide application has been made
  - Samples pulled by Ag Staff
  - Test by NDSU
- Specific products are recommended this year based off these fungicide resistance maps
  - **Inspire** vs. “Triazole”
  - **Proline** vs. “Triazole”
  - **NO** Topsin
- Results are illustrated in the following maps

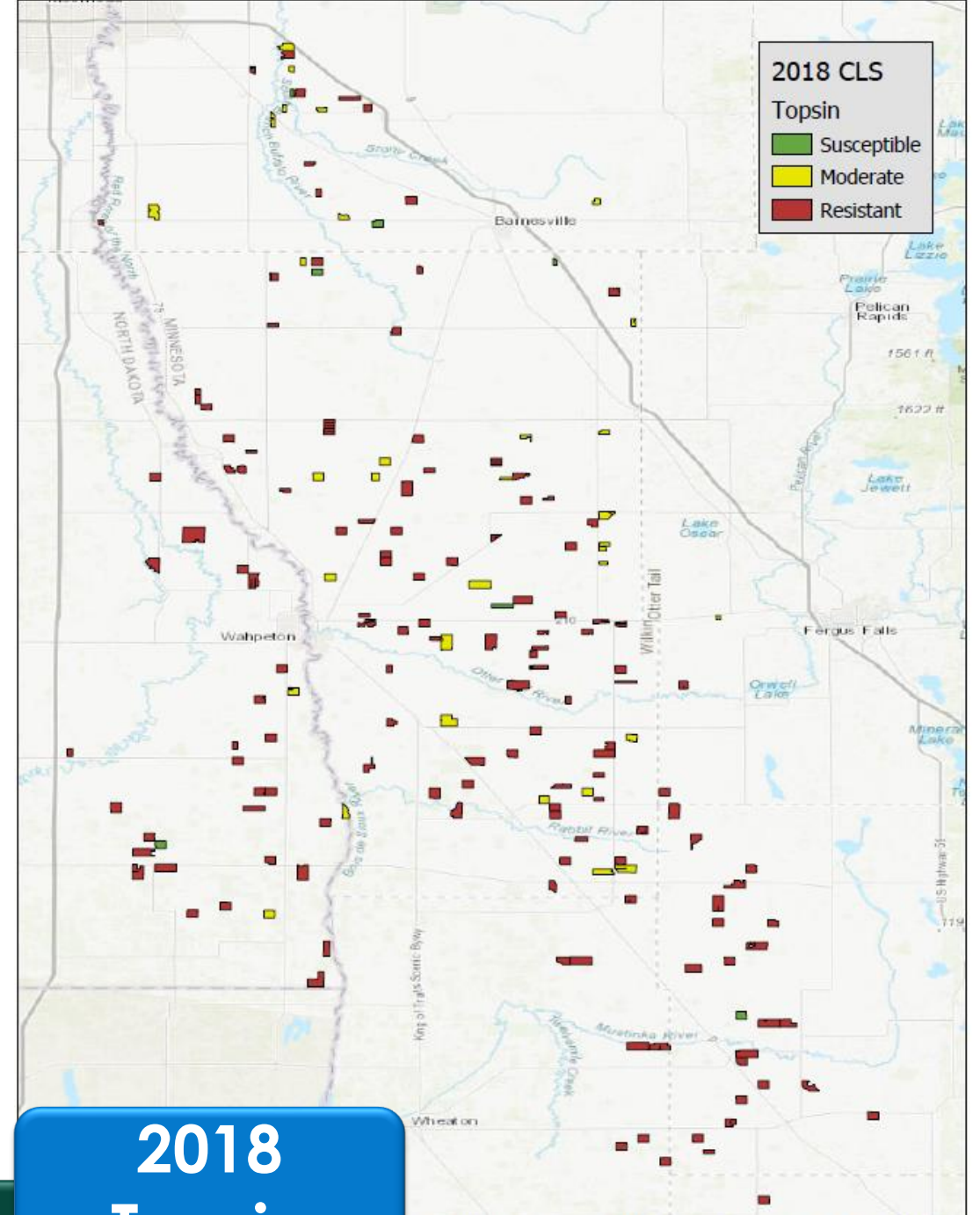




**Topsin**  
 Susceptible  
 Moderate  
 Resistant

**2016  
 Topsin**

USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

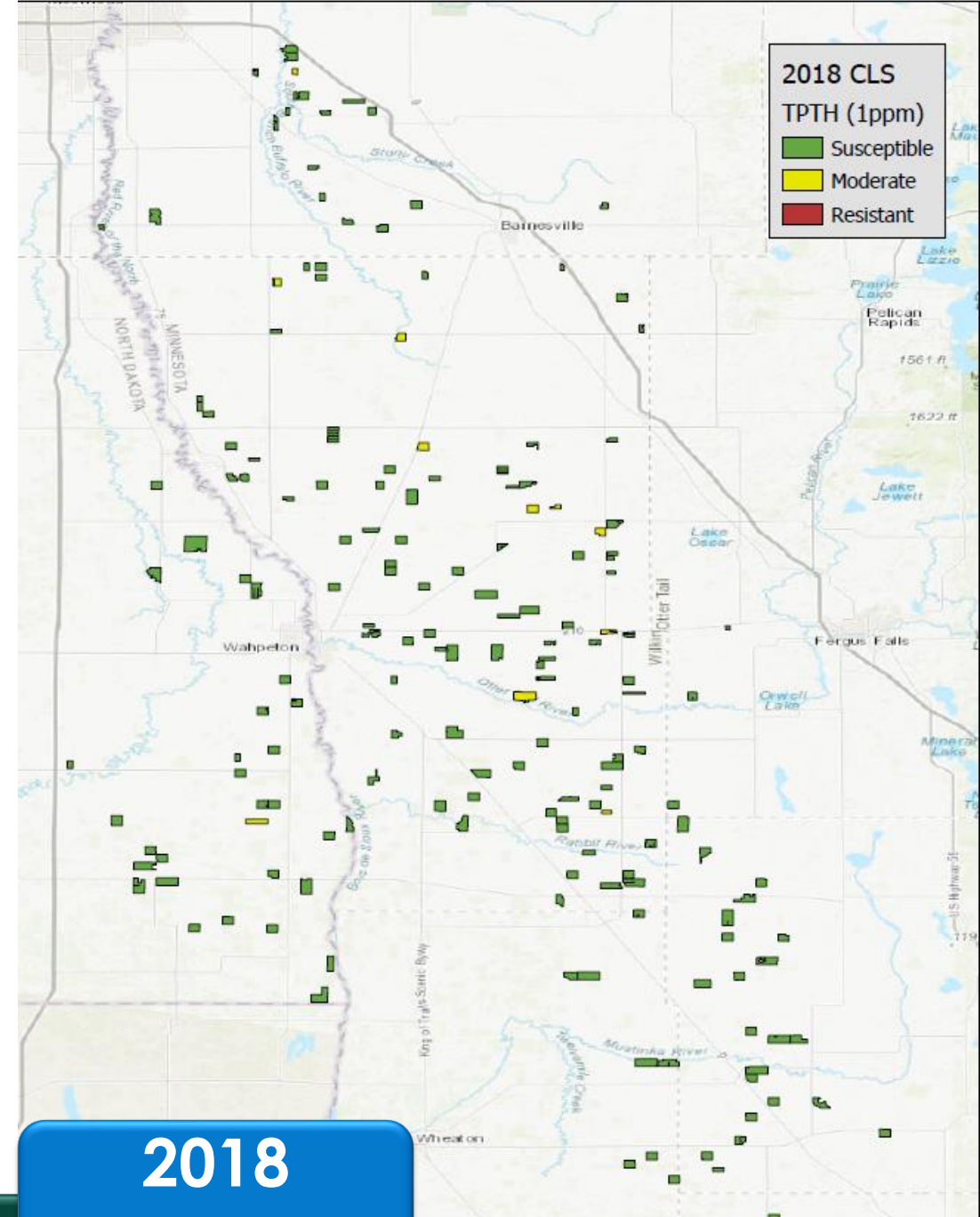
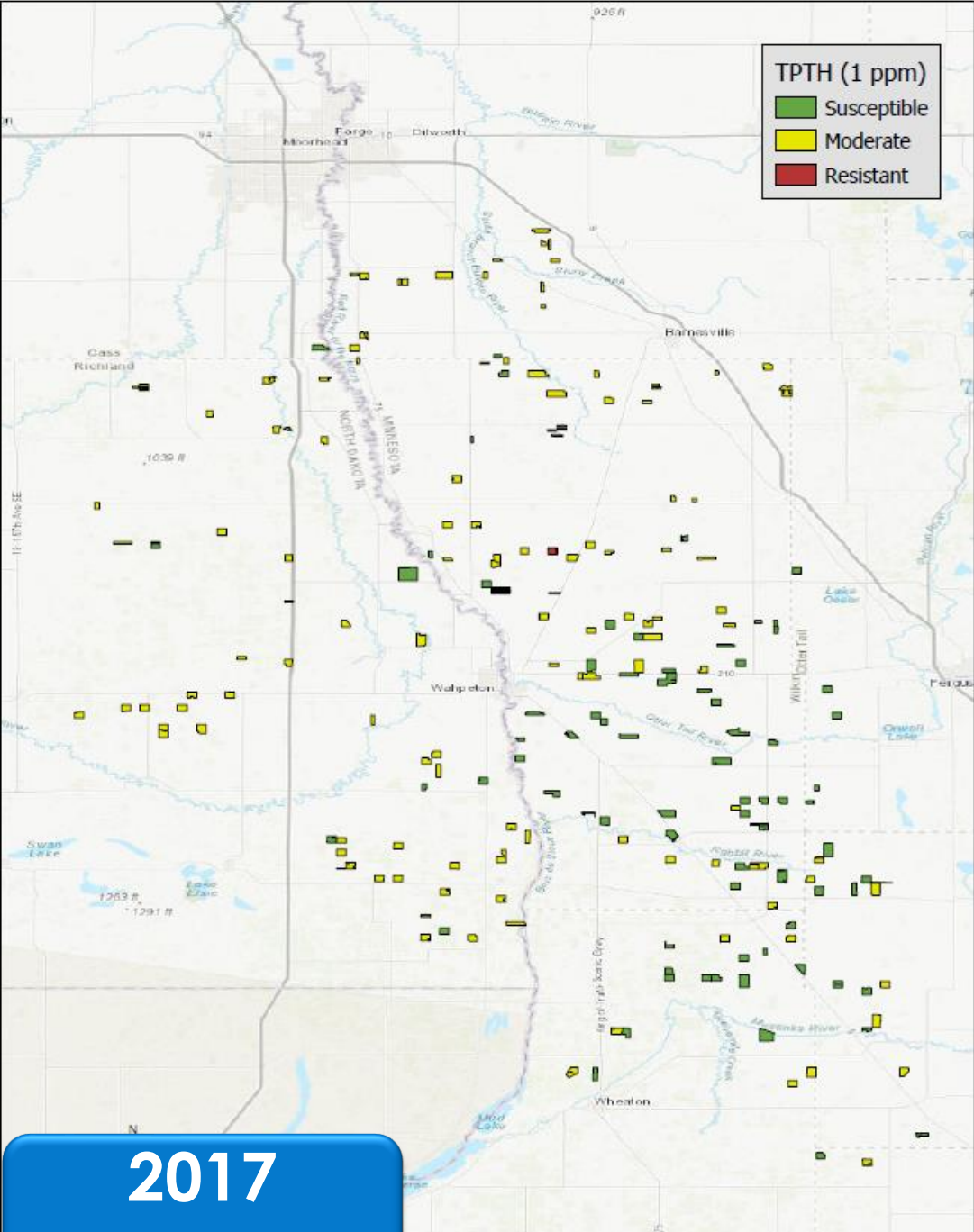


**2018 CLS  
 Topsin**  
 Susceptible  
 Moderate  
 Resistant

**2018  
 Topsin**

USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community





**2017  
TPTH**

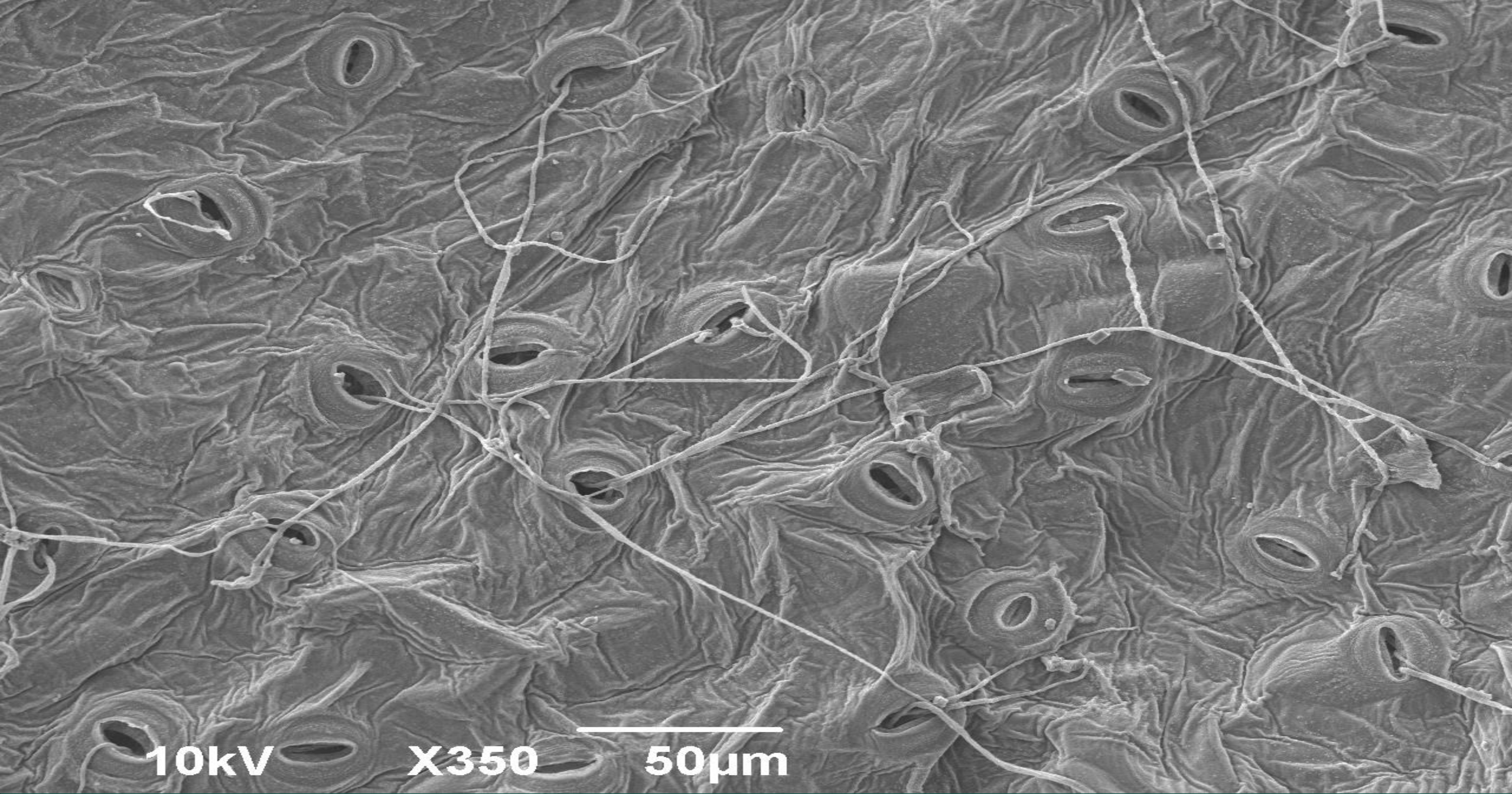
**2018  
TPTH**

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# CLS Sampling Results

- Inspire and Proline are recommended because resistance levels are much less than Eminent
- Topsin is tested every other year
  - 2016 = very effective
  - 2018 = **not** effective
    - Resistance to Topsin is like climbing up a set of stairs, but then having to jump off when you reach the top
    - Resistance will most likely go back down, but in order for that to happen, it must not be used
- Tin is still very effective
  - 2017 was the year we started using tank-mix partners
  - 2018 resistance is much less than 2017
  - **Tank-mix partners work**

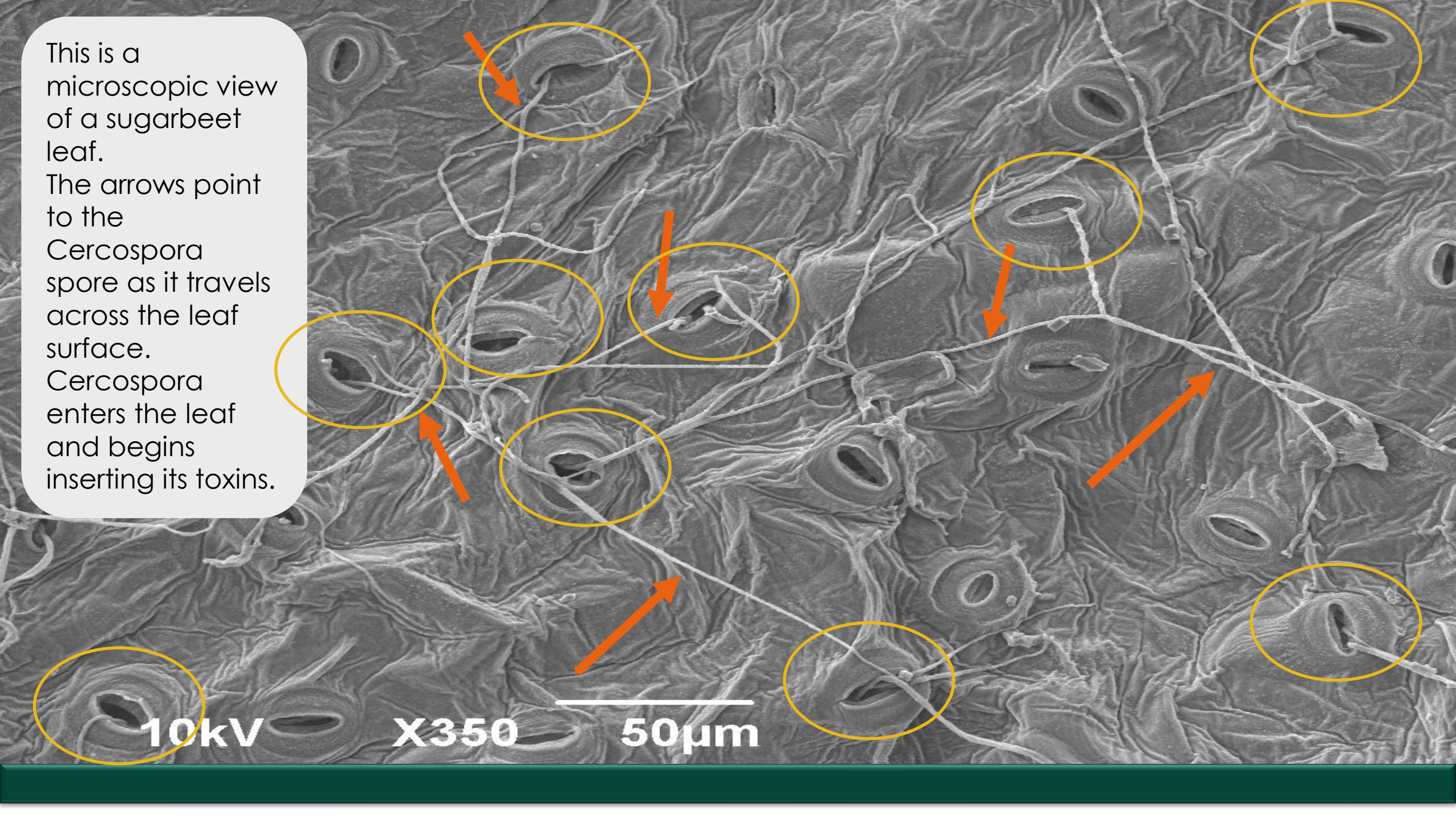


10kV

X350

50µm

This is a microscopic view of a sugarbeet leaf. The arrows point to the Cercospora spore as it travels across the leaf surface. Cercospora enters the leaf and begins inserting its toxins.

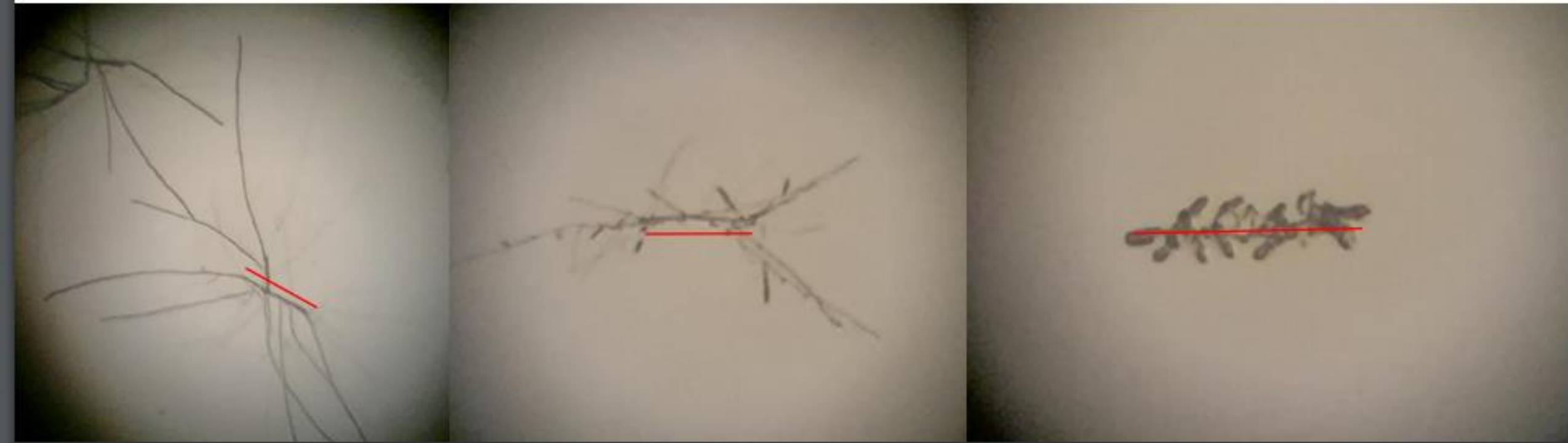


10kV

X350

50µm

# Not All Coppers Are Created Equal...



Control

Cu Sulfate

Oxy+Hydrx

# Not All Coppers Are Created Equal...

Another microscopic view of Cercospora...

The control had no fungicide applied, and the Cercospora is uncontrolled.

Copper Sulfate does show some control of Cercospora, but Copper Oxychloride and Copper Hydroxide provide the best control.

Control

Cu Sulfate

Oxy+Hydrx

**Biological/Chemical  
Barriers**

**2018 'Hot'  
CLS Field**

**Border  
CLS  
Variety**

**Main  
Variety**

**2019 Beet Field**



# Biological and Chemical Barriers

- If your 2019 field is across from or adjacent to a 2018 field:
  - Plant an extremely resistant variety around the edge of the 2019 field
    - Plant the headlands and the first two or three passes with the resistant variety, then switch to your main variety
  - At row closure (or late June), apply an EBDC around the edges of your field
    - One or two passes with the sprayer around the edge would be sufficient





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**MDFC staff will meet with local allied industry to discuss the 2019 CLS Strategies. The reasons for the 2019 recommendations will be explained so that we are all on the same page going forward.**

**We are all working toward the same goal – reduce the impact that CLS has in 2019.**

# Target CLS and Only CLS...

- **No glyphosate + fungicide tank-mixes**

- Fungicide – high water volume and high spray pressure
- Glyphosate – low water volume and low spray pressure
- Convenience will have to be sacrificed to get control

- Higher Water Volumes

- Aerial Applications – 5 GPA
  - Make a ground application(s) to cover areas of field that aerial application can not cover
- Ground Applications – 20 GPA
  - Pay close attention to nozzle type and PSI



**10 GPa**



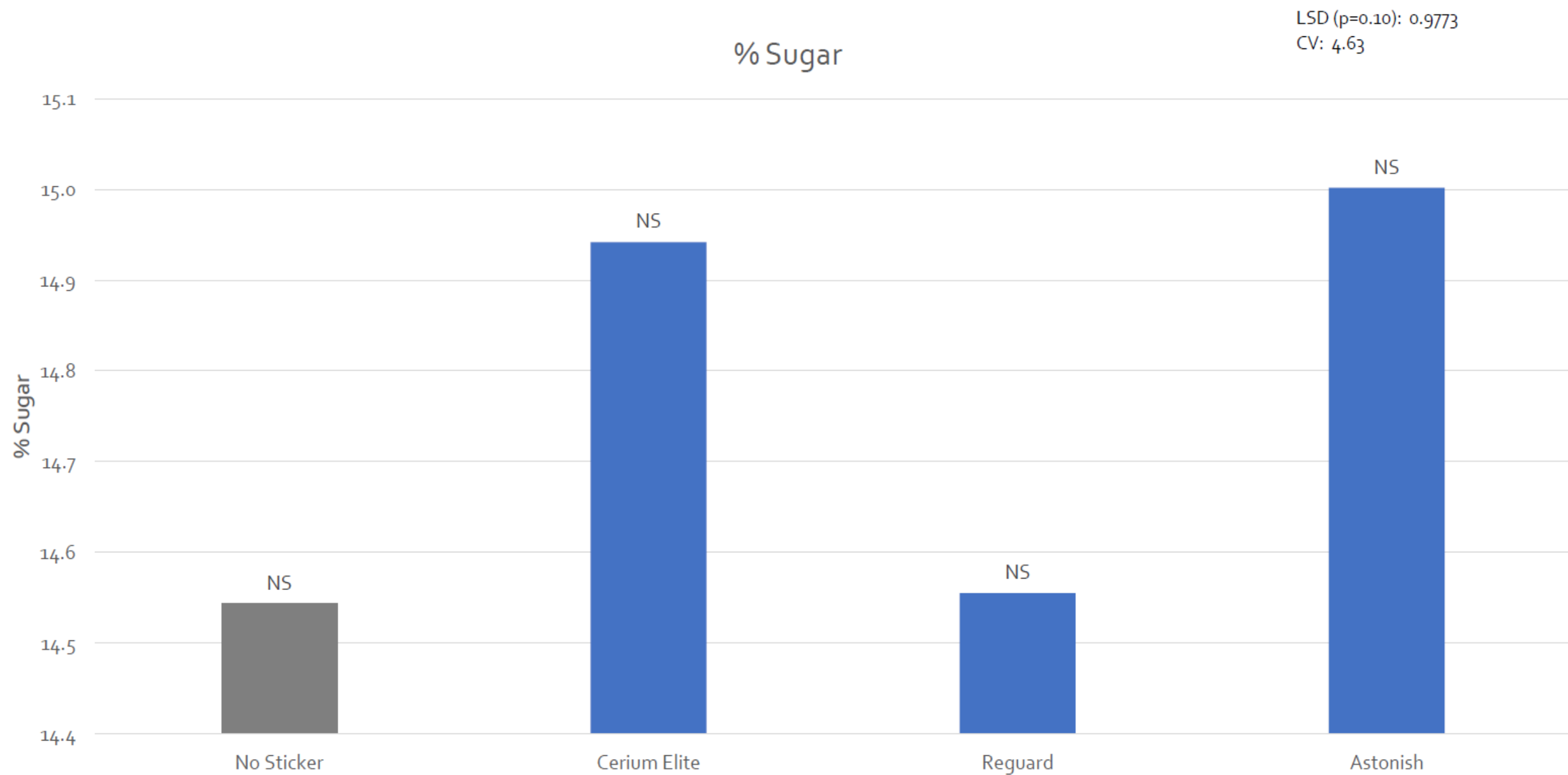
**20 GPa**

# Should I be using Adjuvants or Biologicals for CLS Control?

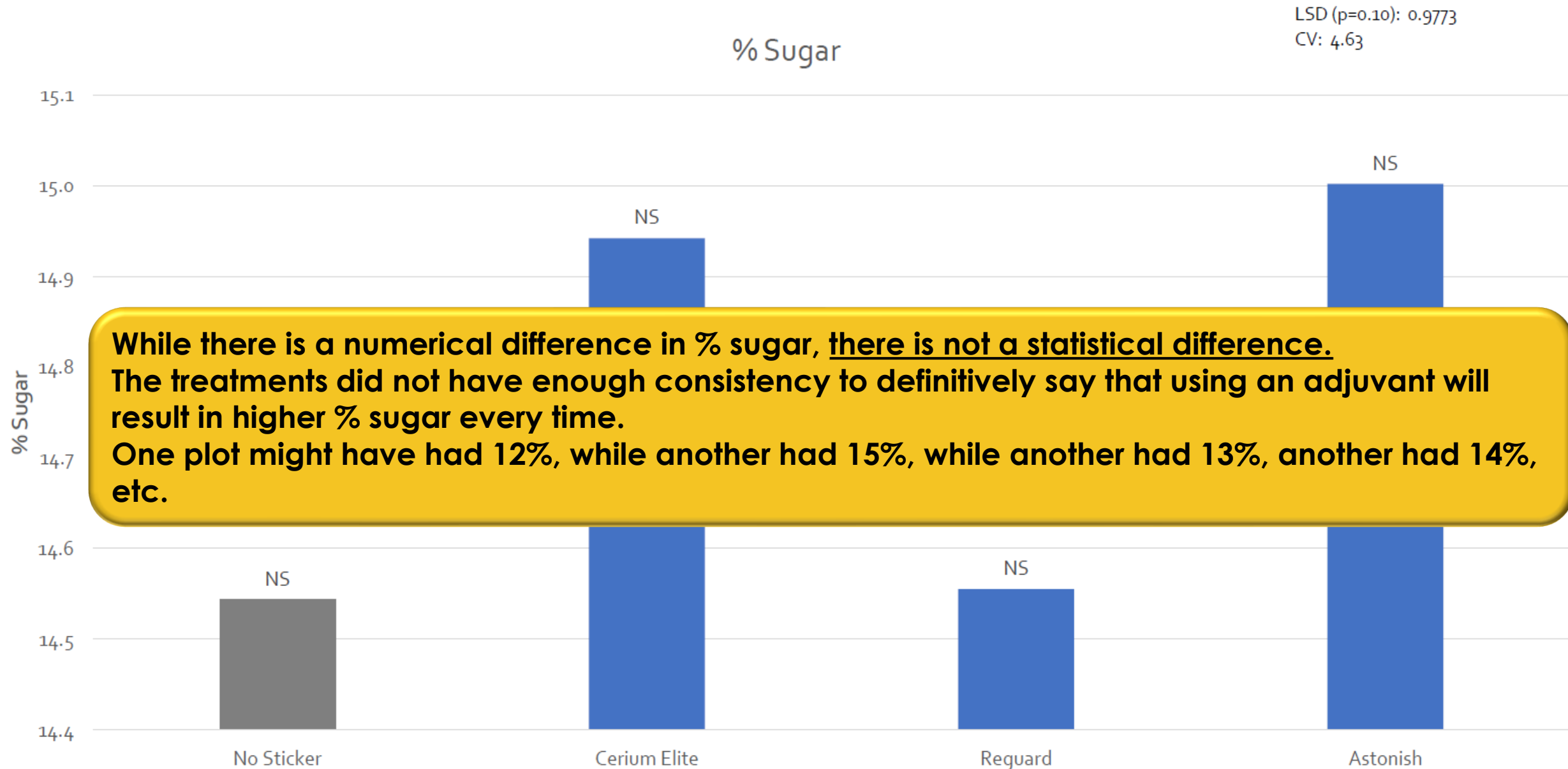


- Jury is still out on adjuvants
  - **There is not a Silver Bullet**
  - There has not been one single product that has stood the test of time
  - They can work against you – systemic vs. protectant
  - Try good, solid application methodology first – invest your \$\$\$ wisely...
- **Biologicals do not work**
- **Hydrogen Peroxide does not work**

# Tin + Copper + Adjuvant ~ 2018



# Tin + Copper + Adjuvant ~ 2018



# Cercospora Leafspot – 2019



- **Inoculum level**
  - Still present from 2018
- **Variety Selection**
- **Chemical & Varietal Borders**
- **Surgical Application of Fungicides**
  - TPTH and Triazole Resistance @ Manageable Levels
  - Full Rates at all times
  - Stay on schedule – Adjust for rainfall
  - Beware of Reptile Lubricants
  - Tank-mix, Tank-mix, Tank-mix
- **Local Industry Alignment**

