

Soybean Disease Update

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Session Goals

- Participants will learn to identify important diseases affecting soybean
- Attendees will be familiarized with disease management options.
- Participants will learn about fungicide resistance in Nebraska.



Frogeye Leaf Spot (FLS)

Cercospora sojina (fungus)

– **Symptoms**

- Small tan/gray lesions
- Red/purple border
- Upper leaves

– **Favorable Conditions**

- Optimal temp (77-86 °F)
- Humidity
- Frequent rain/irrigation



Frogeye Leaf Spot Management

- **Select resistant varieties (when available)**
- **Avoid growing continuous soybean**
- **Apply foliar fungicides**
 - **only after scouting**
 - **at the right stage**



Foliar Fungicides

There are 3 classes of fungicides typically used

FUNGICIDE	FRAC GROUP
QoI, also known as strobilurin fungicides	Group 11
DMI fungicides	Group 3
SDHI fungicides	Group 7

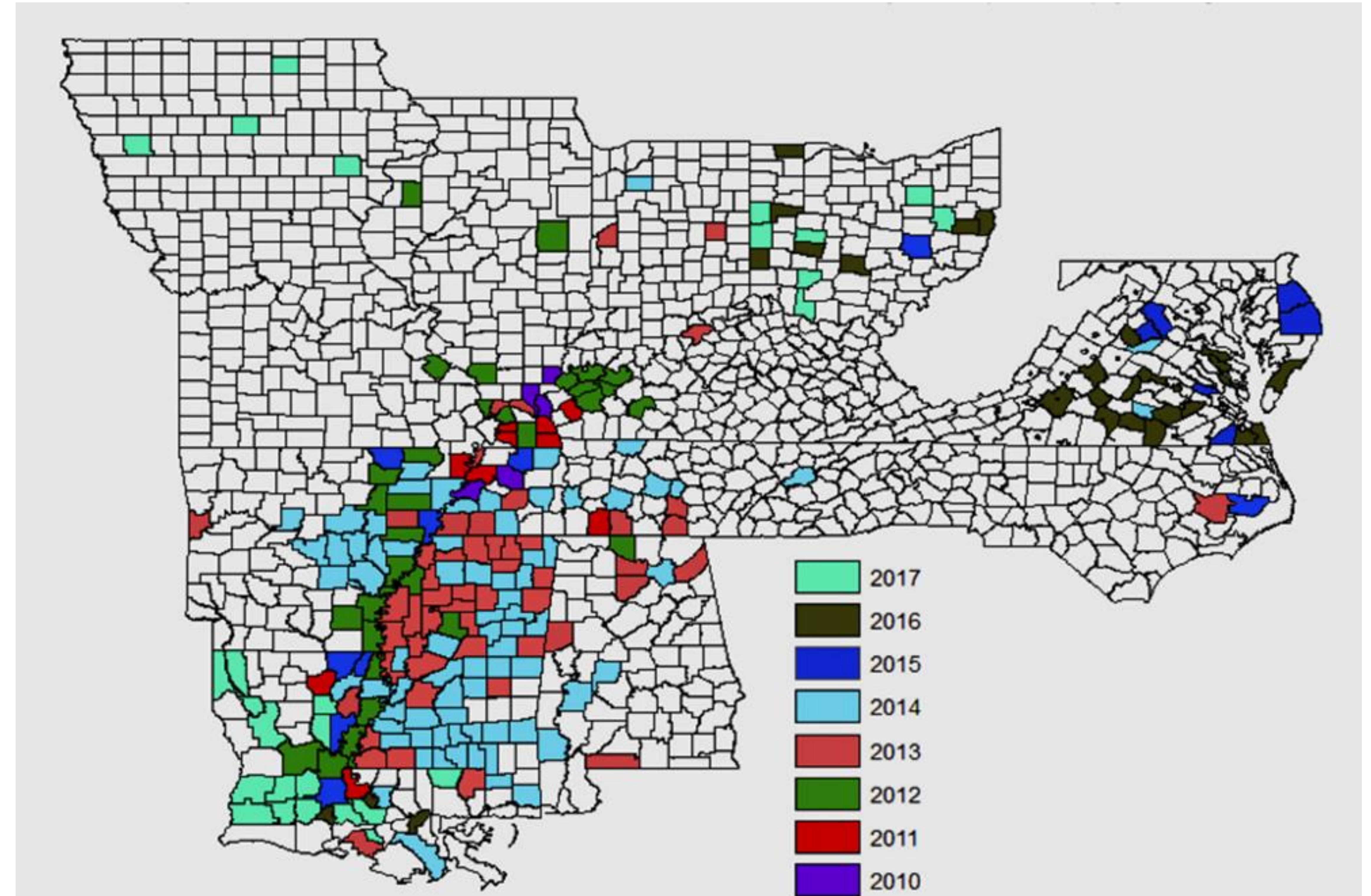
Group 11-Qol fungicides

- **Historically most effective**
- **BUT resistance is becoming more common in other states and now Nebraska**
- **Resistance reduces efficacy**



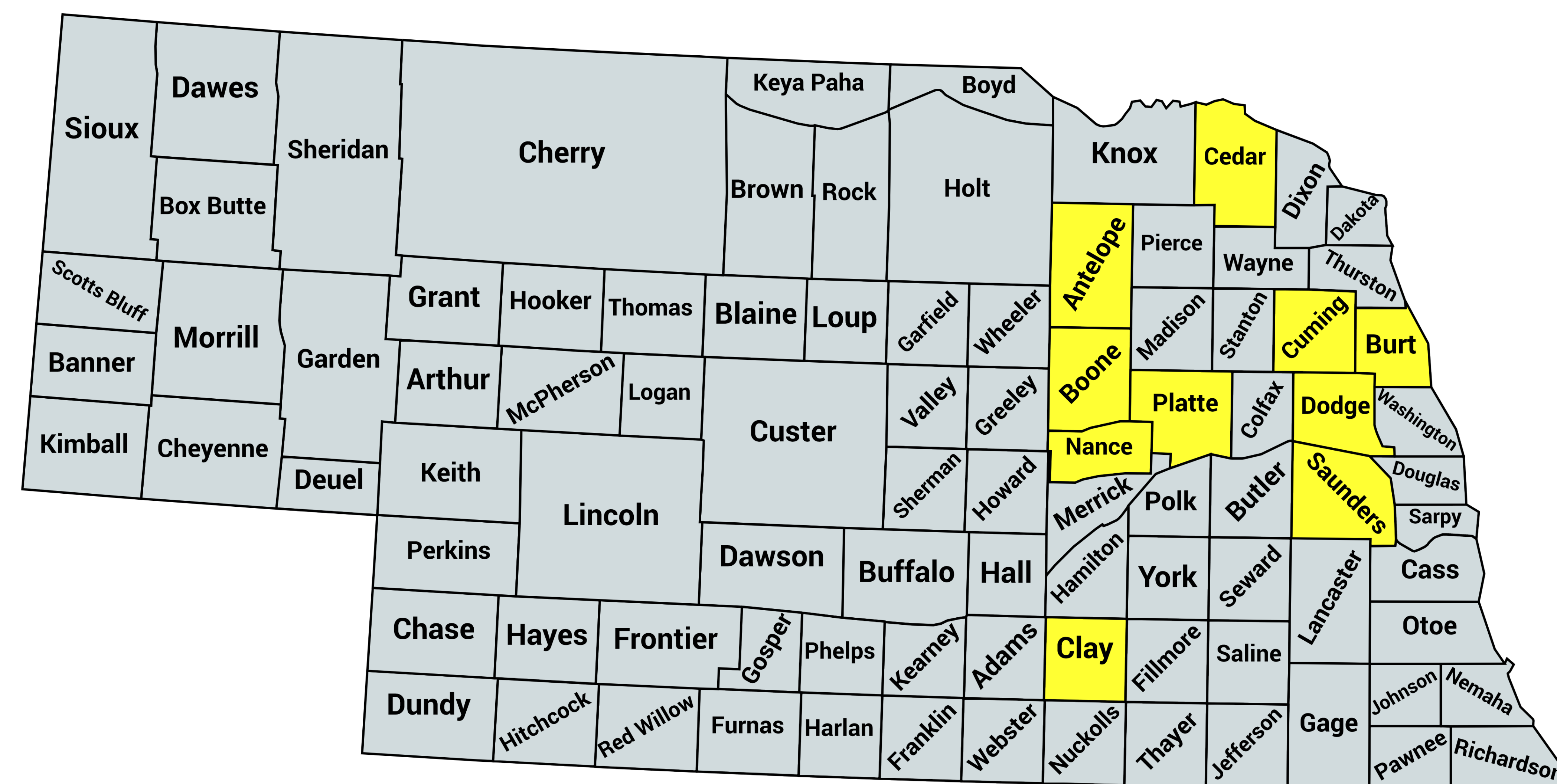
Widespread QoI resistance in *C. sojae*

- **First reported:
Tennessee, 2010**
- **By 2017, QoI
resistance was
reported in 240
counties from 14
states**



First report in Nebraska: 2019

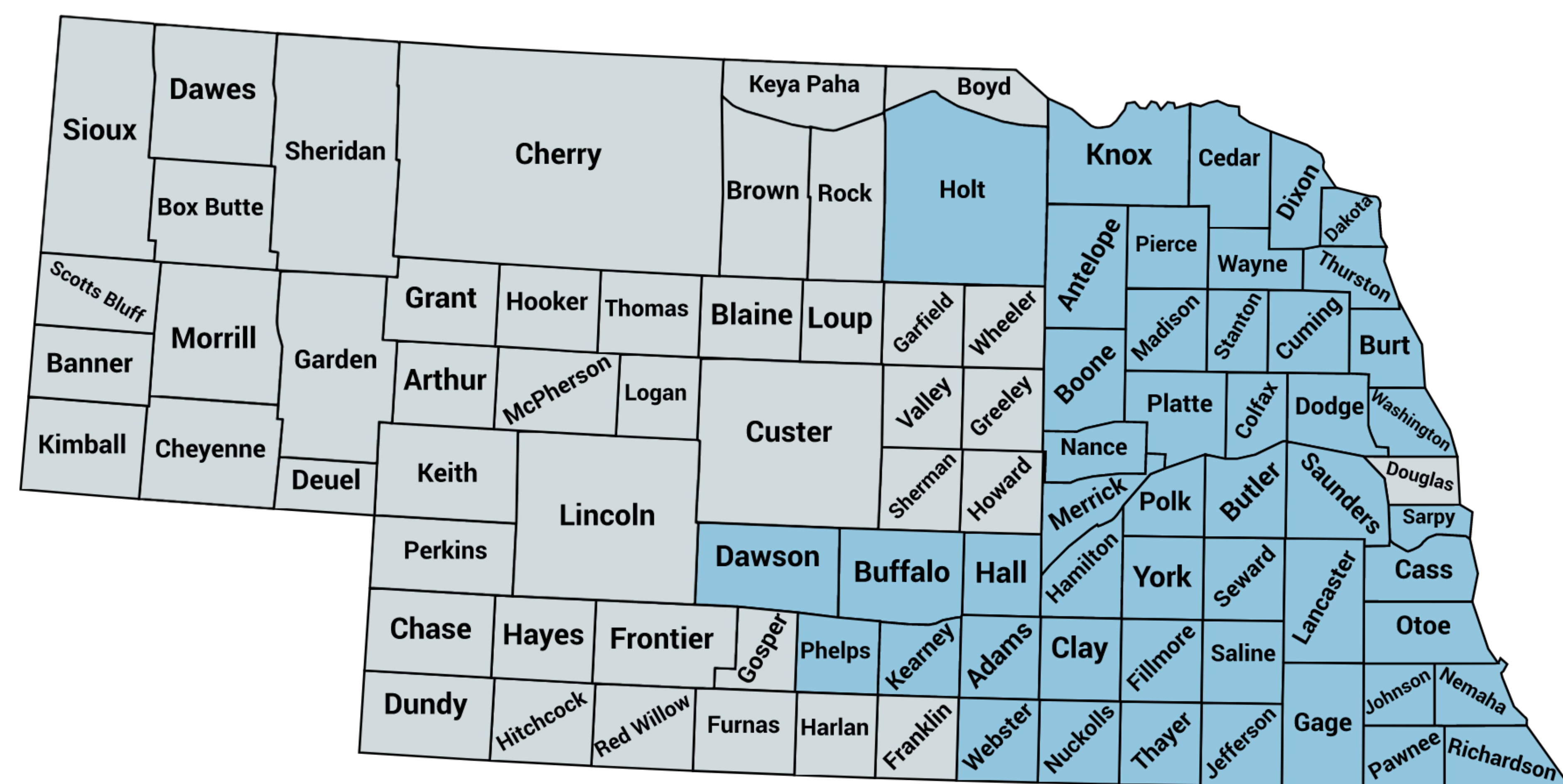
**2019 - QoI Fungicide
Resistance Confirmed in
Cercospora sojina causing
Frogeye Leaf Spot in (all) 10
Nebraska counties sampled**



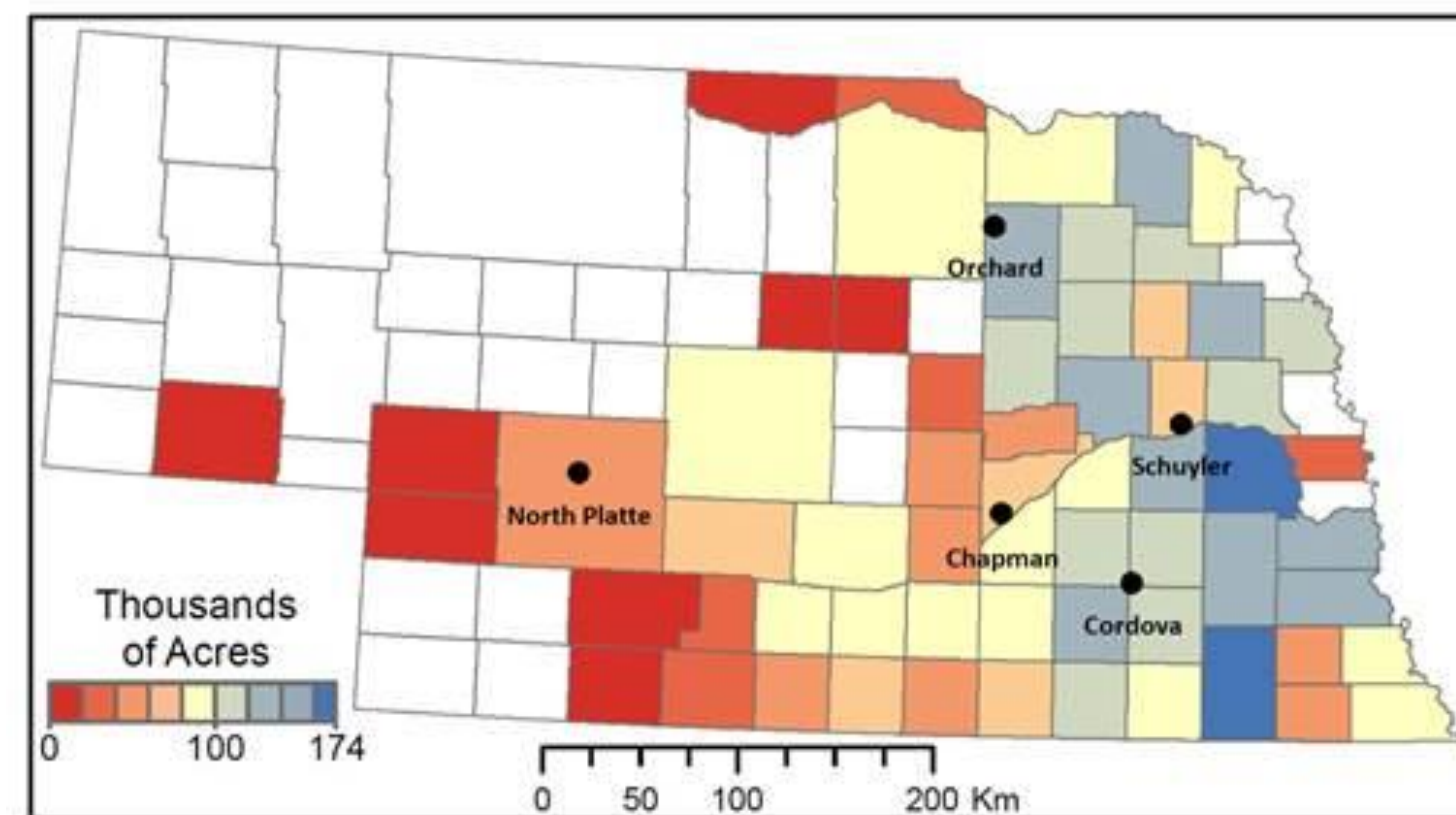
Crop Production Clinics

Understanding the distribution of resistance in Nebraska

Counties sampled in 2020



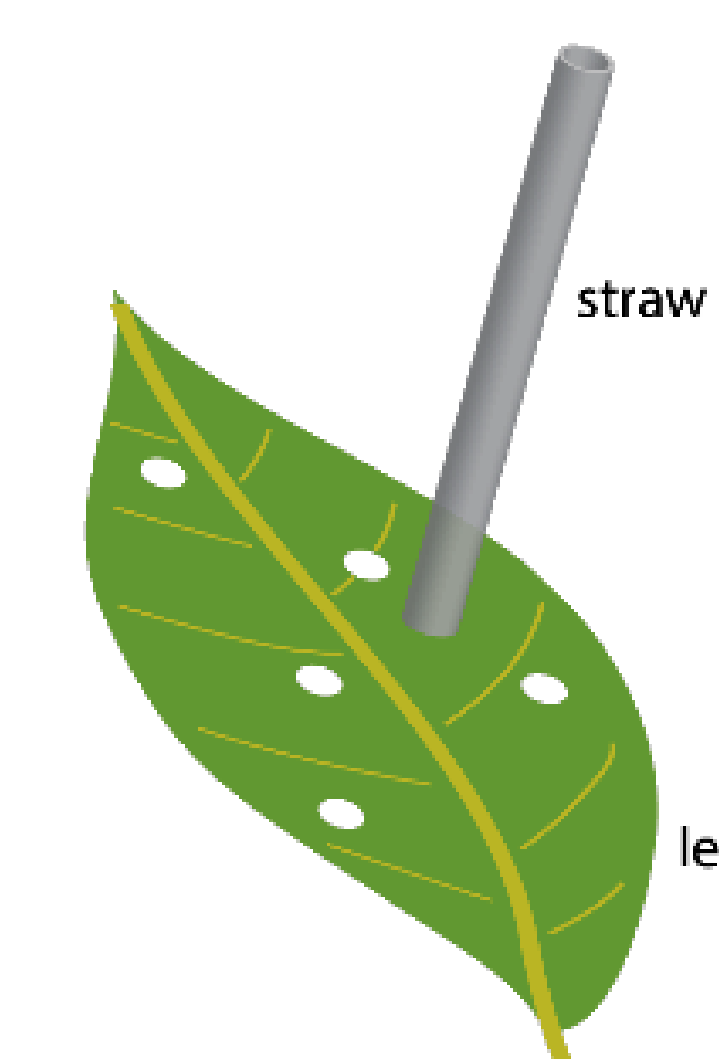
Soybean Production in Nebraska



Samples collected from 128 fields in 47 counties

Current research

- **Developing a rapid test for fungicide resistance to the QoI group**
- **Advantages of the test**
 - 2-3 hours
 - In lab and in field
 - Timely suggestions for fungicide selection



Soybean Foliar Fungicide Survey

- Distributed by email and hard copy
- Please complete only once
- GOALS
 - Understand knowledge level about fungicides
 - Understand the factors affecting fungicide use decisions
- OBJECTIVE
 - Improve further education in Nebraska

Nebraska Soybean Foliar Fungicide Use Survey

To be able to better customize our services and recommendations to your needs and those of others, we are conducting the following survey about fungicide use in Nebraska. Please help us better serve you by completing the following survey. This is completely voluntary, and responses will be kept anonymous. /

Q1) What is your primary occupation?

<input type="checkbox"/> Farmer/producer	<input type="checkbox"/> Agribusiness representative (may include seed, chemical, cooperative employee, etc.)
<input type="checkbox"/> Farm manager	<input type="checkbox"/> Other _____
<input type="checkbox"/> UNL or Extension employee	
<input type="checkbox"/> Crop consultant/Agronomist	

Q2) In which county/counties in Nebraska is/are most of your field/area of work located? Write in answer:

Q3) Did you grow/manage soybean in the last 5 years?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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Q4) How many total crop acres do you farm, manage, or otherwise influence? Select an approximate range from the following:

<input type="checkbox"/> 0-999	<input type="checkbox"/> 10,000-19,999
<input type="checkbox"/> 1,000-2,999	<input type="checkbox"/> 20,000-99,999
<input type="checkbox"/> 3,000-6,999	<input type="checkbox"/> 100,000-999,999
<input type="checkbox"/> 7,000-9,999	<input type="checkbox"/> 1,000,000+

Q5) What are your the most important diseases of soybeans? Select up to 5 most important diseases in your field.

<input type="checkbox"/> Bacterial blight	<input type="checkbox"/> Pod and stem blight
<input type="checkbox"/> Brown spot (Septoria)	<input type="checkbox"/> Phytophthora root / stem rot
<input type="checkbox"/> Brown stem rot (BSR)	<input type="checkbox"/> Seedling diseases
<input type="checkbox"/> Cercospora leaf blight / Purple seed stain	<input type="checkbox"/> Stem canker
<input type="checkbox"/> Frogeye leaf spot (FLS)	<input type="checkbox"/> Soybean cyst nematode (SCN)
<input type="checkbox"/> Fusarium root rot	<input type="checkbox"/> Sudden death syndrome (SDS)
	<input type="checkbox"/> White mold / Sclerotinia stem rot

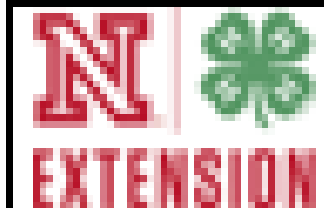

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Soybean Foliar Fungicide Survey

continued

- Takes about 10 min to complete
- Completely anonymous
- For research purposes only
- No known risks taking the survey
- Can stop at any time with no penalty



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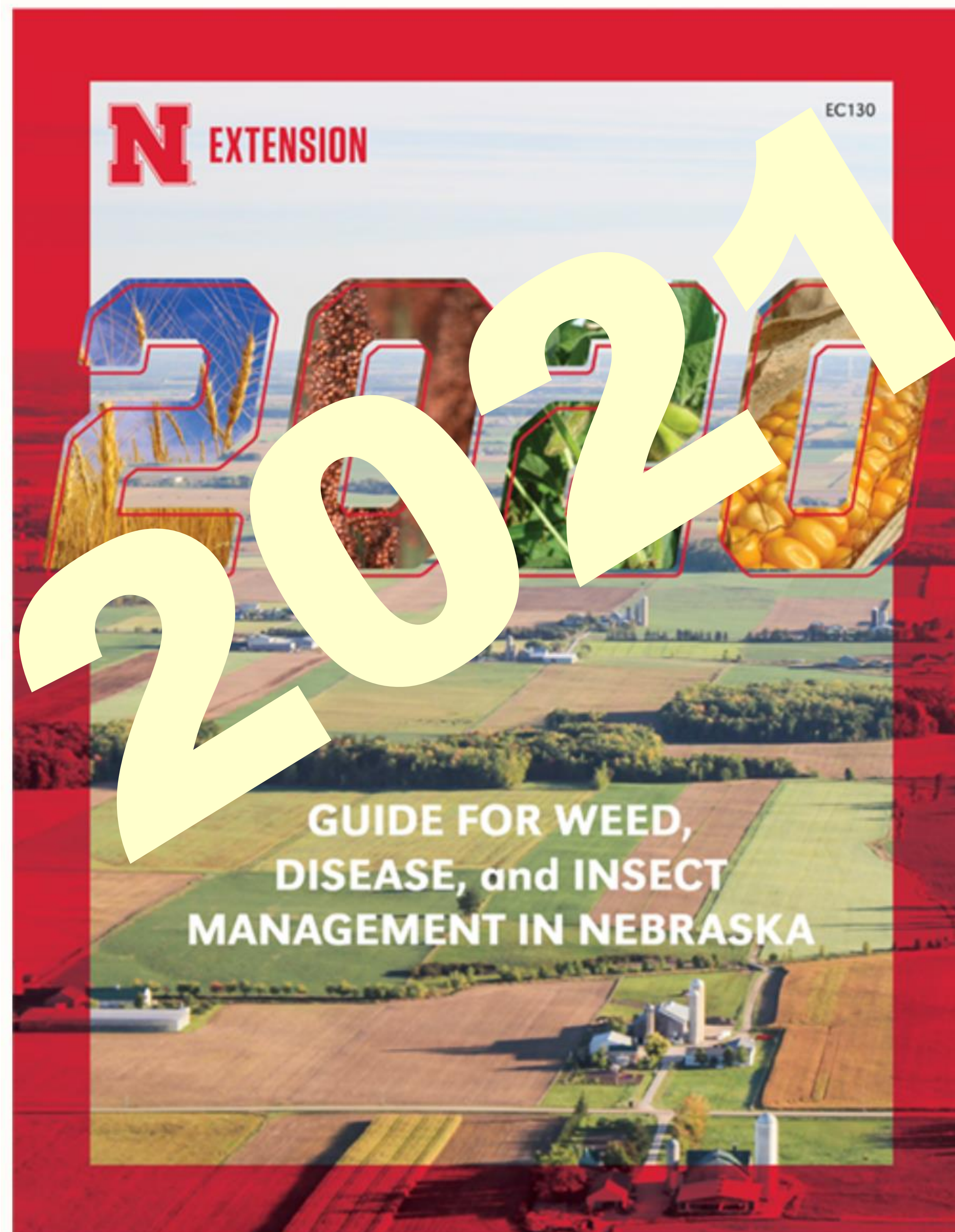
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2021 GUIDE FOR WEED, DISEASE, AND INSECT MANAGEMENT Changes to the Disease Management Section



- New Section Editor added –
 - Dr. Melissa Bartels, Educator – Butler and Polk Counties
- Addition of the “Alfalfa: Foliar Fungicide and Bactericide Product Information” table
- Recent changes summarized in the “What’s New in Plant Pathology” presentation

New foliar disease management products for soybean

Trade Name	Active Ingredient(s)	Fungicide Class(es)	Change(s) Made
Lucento	Flutriafol 26.5% + Bixafen 15.6%	Mixed Modes of Action (Groups 3 + 7)	Added to corn, sorghum, soybean, and wheat tables for foliar disease management
Miravis Neo	Propiconazole 11.6% Pydiflumetofen 7.0% Azoxystrobin 9.3%	Mixed Modes of Action (Groups 3 + 7 + 11)	Added to corn and soybean tables for foliar disease management
Revytek	Mefentrifluconazole 11.61% Pyraclostrobin 15.49% Fluxapyroxad 7.74%	Mixed Modes of Action (Groups 3 + 7 + 11)	Added to corn and soybean tables for foliar disease management
Veltyma	Mefentrifluconazole 17.56% Pyraclostrobin 17.56%	Mixed Modes of Action (Groups 3 + 11)	Added to corn, potato, soybean, sugar beet tables for foliar disease management

*Taken from supplemental presentation “What’s New in Plant Pathology”

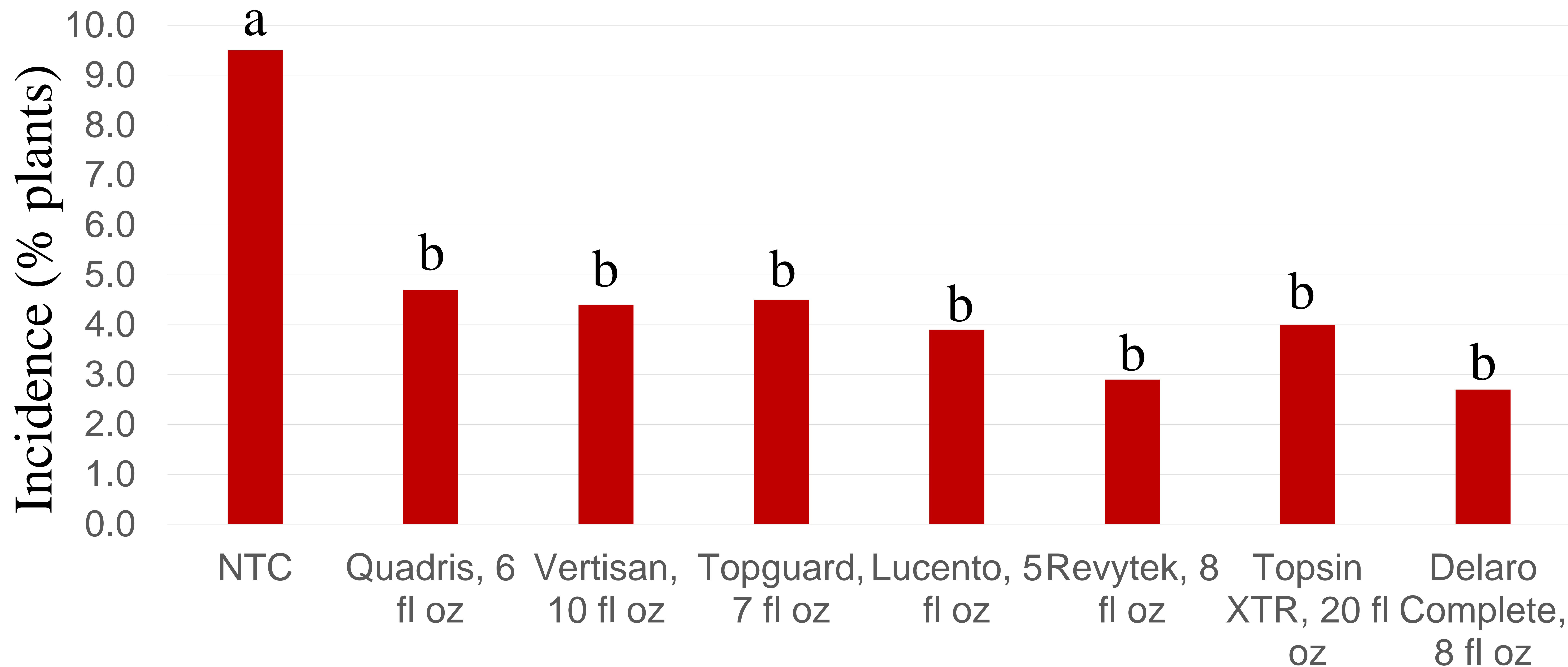
Additional content can also be found in the “2021 Guide for Weed, Disease, and Insect Management”

2020 Foliar Fungicide Trial

- UNL-HAL, Concord, NE
- NK S29-K3X planted 12 May @ 140,000 seed/A
- 4-row plots, 30' long, 6 reps in RCB
- Applications on 22 July @ R3
- Disease ratings 7 Aug (R5), 21 Aug (R6), 4 Sept (R7)
- Statistics - Fisher's LSD test ($P > 0.10$)

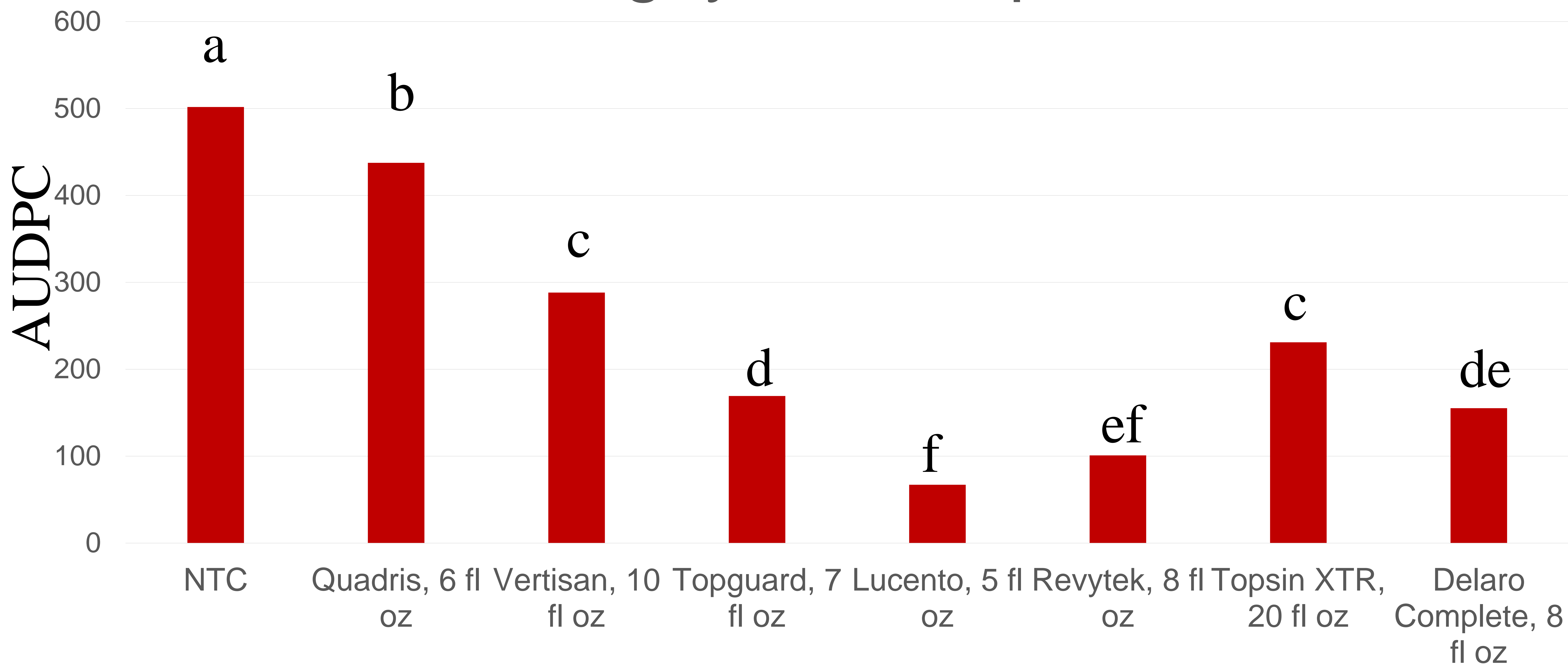
Crop Production Clinics

White Mold



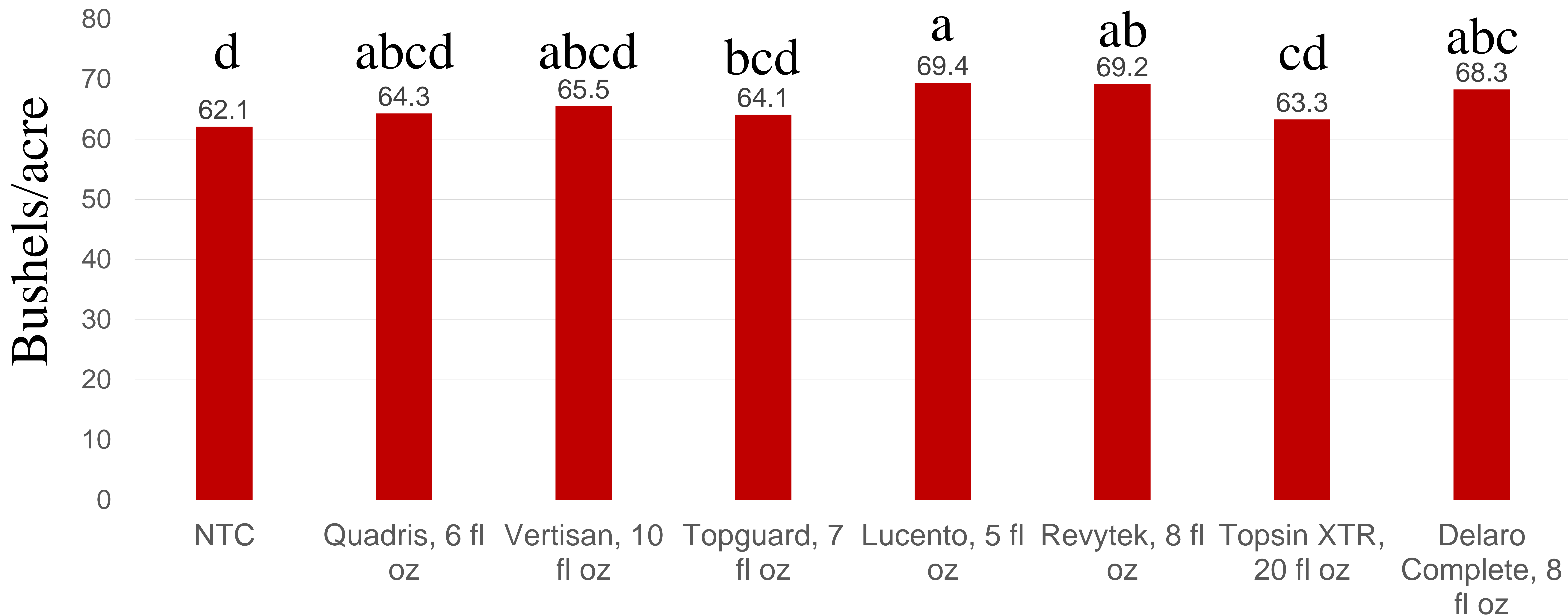
Crop Production Clinics

Frogeye Leaf Spot



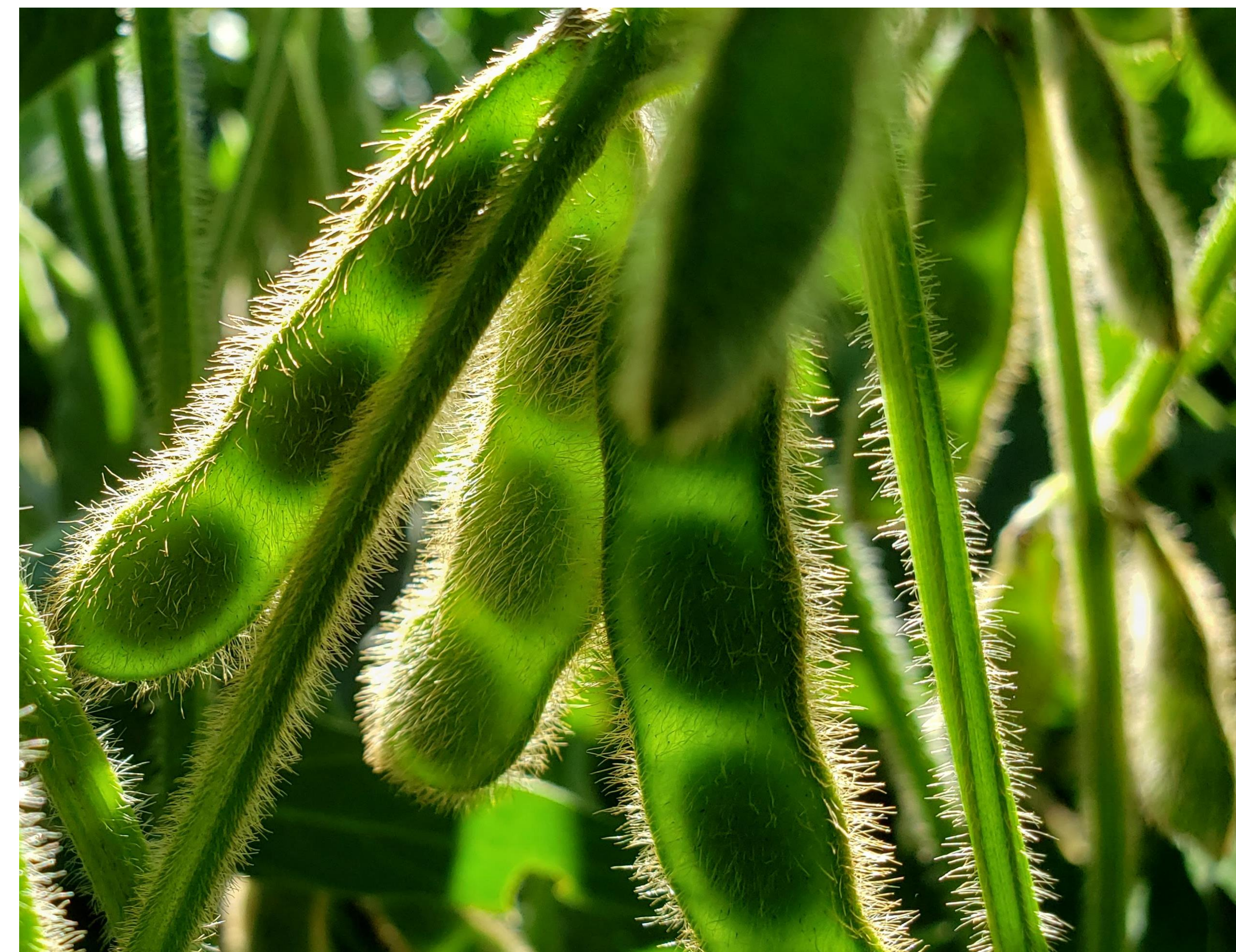
Crop Production Clinics

Yield



Disease Management Starts NOW with Seed Selection

- Frogeye Leaf Spot (FLS)
 - Resistant varieties are available
- Soybean Cyst Nematode (SCN)
 - “New” source of resistance – PI 89772
 - 2 varieties MG 2.3
 - Golden Harvest brand GH2329X
 - NK brand S23-G5X
- Sudden Death Syndrome (SDS)
 - Can reduce SDS severity by $\leq 80\%$



Take Home Points

- Management of frogeye leaf spot can be achieved with a combination of disease-resistant varieties, crop rotation, and foliar fungicides.
- But, resistance to Group 11 QoI fungicides has been confirmed in the frogeye leaf spot fungus in some Nebraska soybean fields.
 - Testing of samples will continue in 2021, as well as a fungicide survey.
- Another source of resistance to SCN is now available and could be used as part of a rotation with PI88788 and/or Peking to better manage SCN.

Crop Disease Resources



- Crop Watch - <http://cropwatch.unl.edu/>
 - Newsletter, efficacy trial data, and publications



- Market Journal – weekly episode or see videos at: <http://marketjournal.unl.edu/>



- Videos – YouTube – UNL CropWatch channel
 - short Corn and Soybean Disease videos



- Crop Protection Network <http://cropprotectionnetwork.org>



- Tamra Jackson-Ziems on Twitter - @tjcksn
- Contact local county Extension office

Frequently Asked Questions

- When should you begin scouting for diseases?
- What are the best management strategies for Phytophthora root and stem rot (PRSR)?
- For frog-eye leaf spot (FLS) management, if you're concerned about Group 11 fungicide resistance, what would be the most effective management strategy?

