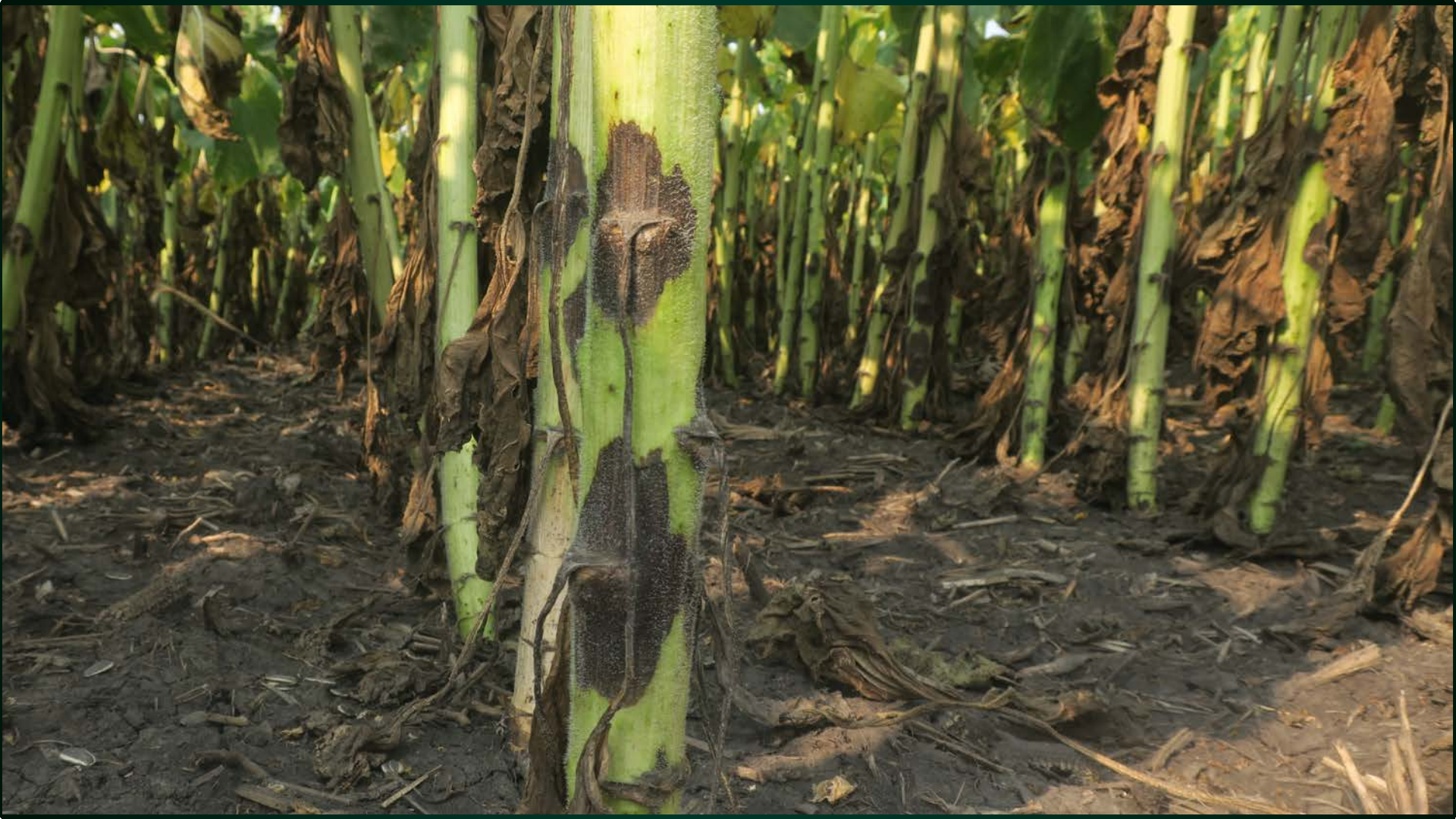


Fungicide Management for Phoma Black Stem in Sunflowers

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S
L

op
Car

Black
em





Impact of Phoma?

- Previous research
 - Indicates there may be yield effects
 - Fungicides can manage disease
 - R1 growth stage may be most effective timing
- National Sunflower Association Survey
 - 2013- 66% of fields
 - 2015- 80% of fields
 - 2017- 56% of fields

Objective

- Determine yield impacts from Phoma
- Evaluate fungicide efficacy and timing on management of Phoma Black Stem

Timing Trials

Materials and Methods

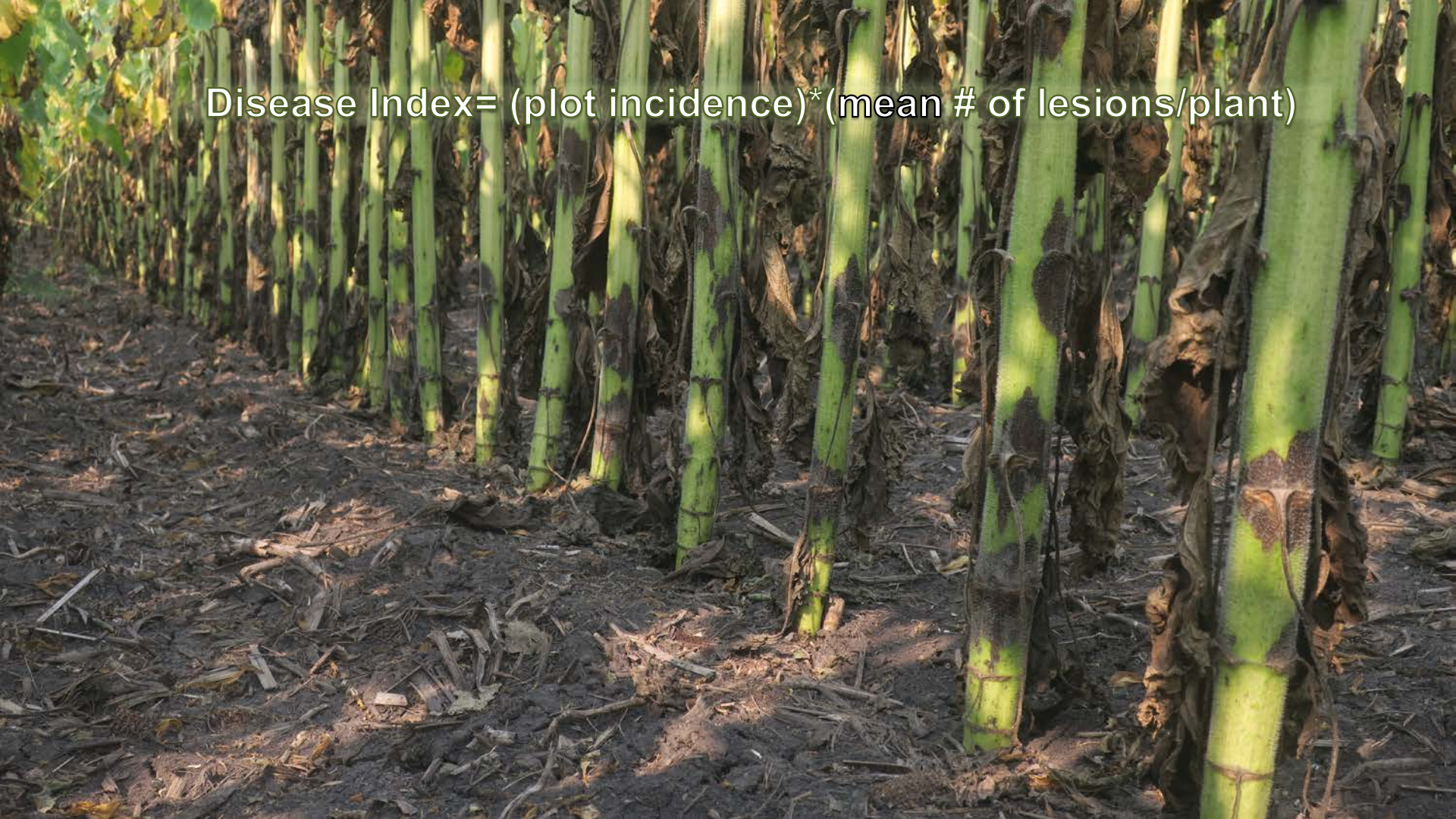
- Two oil-type hybrids
- RCBD and four replications
- Applied singly and in combination at the V8-V10, R1, and R5 growth stages
- All treatments Headline 6 fl oz/ac
- Davenport, ND - history of Phoma



Disease Pressure

- A natural epidemic occurred
 - 100% incidence in non-treated control
- Disease Index = (incidence x severity) of ten arbitrarily selected plants
 - Incidence = number of stems with presence of lesions
 - Severity = mean number of lesions per stem

Disease Index= (plot incidence)* (mean # of lesions/plant)



Disease Index= (plot incidence)* (mean # of lesions/plant)

(8/10)



Disease Index = (plot incidence) * (mean # of lesions/plant)

3 lesions/plant

3

0

5

0

3

3

5

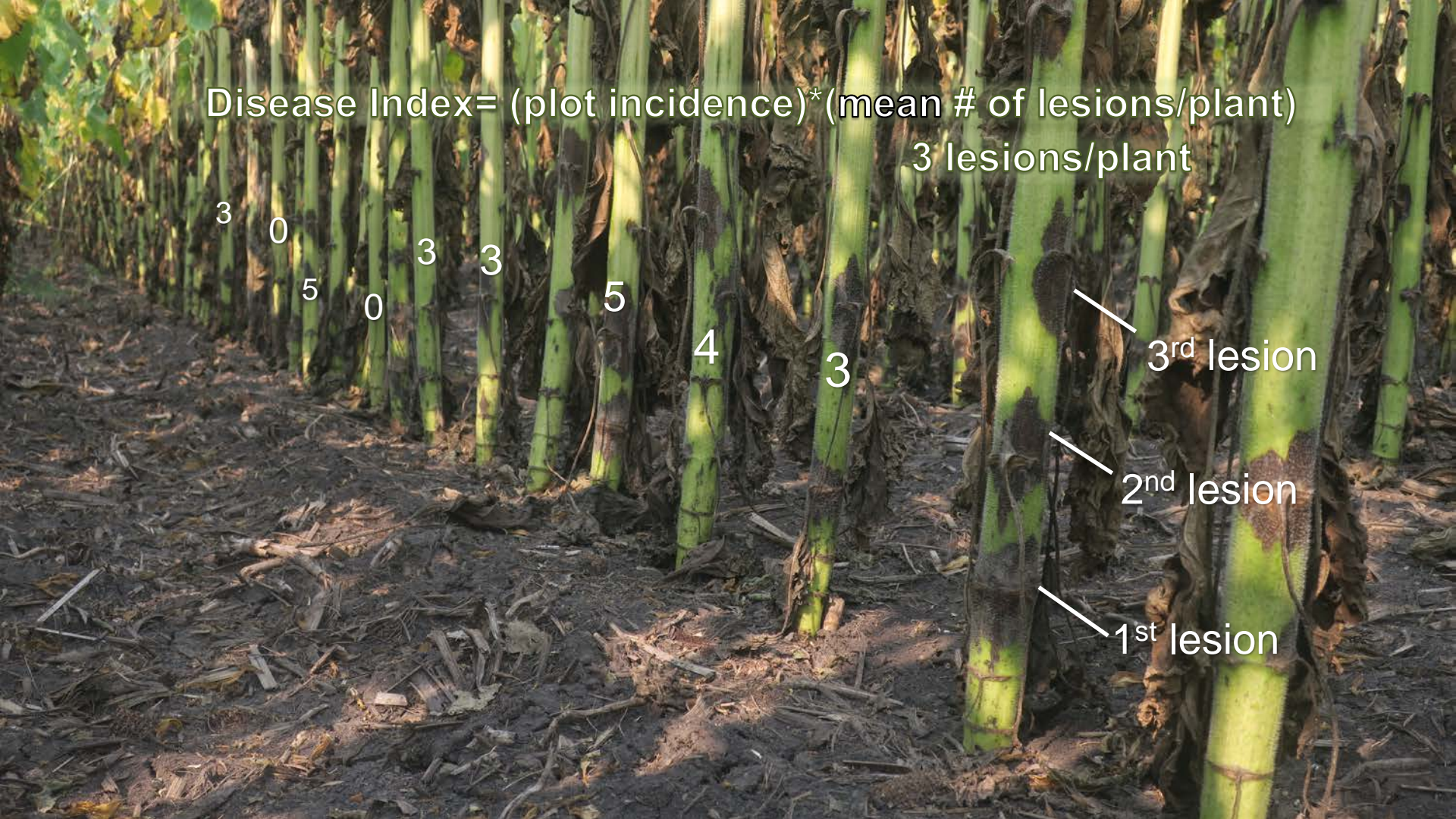
4

3

3rd lesion

2nd lesion

1st lesion



Disease Index= (plot incidence)* (mean # of lesions/plant)

2.4

(8/10)

3 lesions/plant

3

5

3

3

5

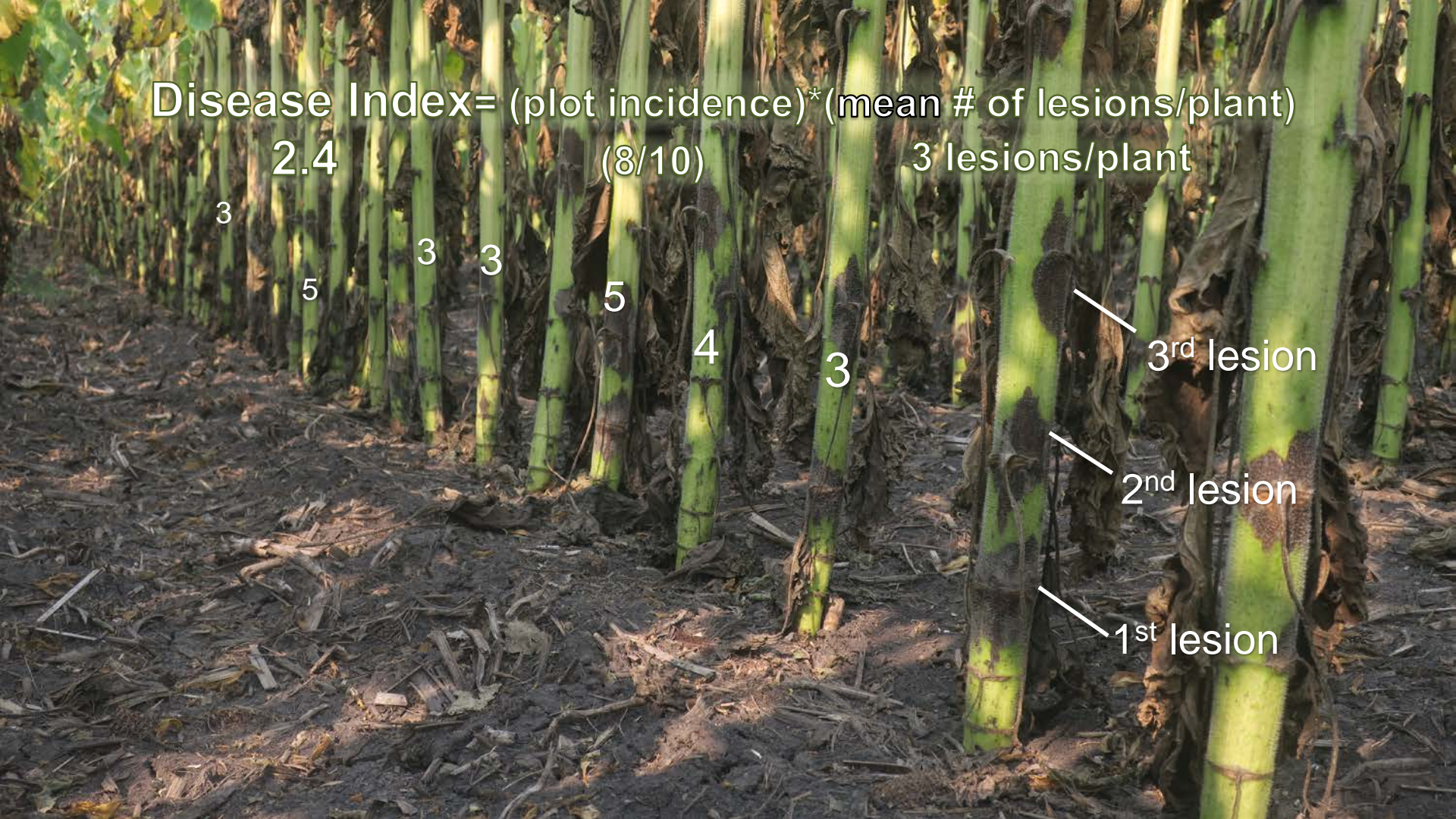
4

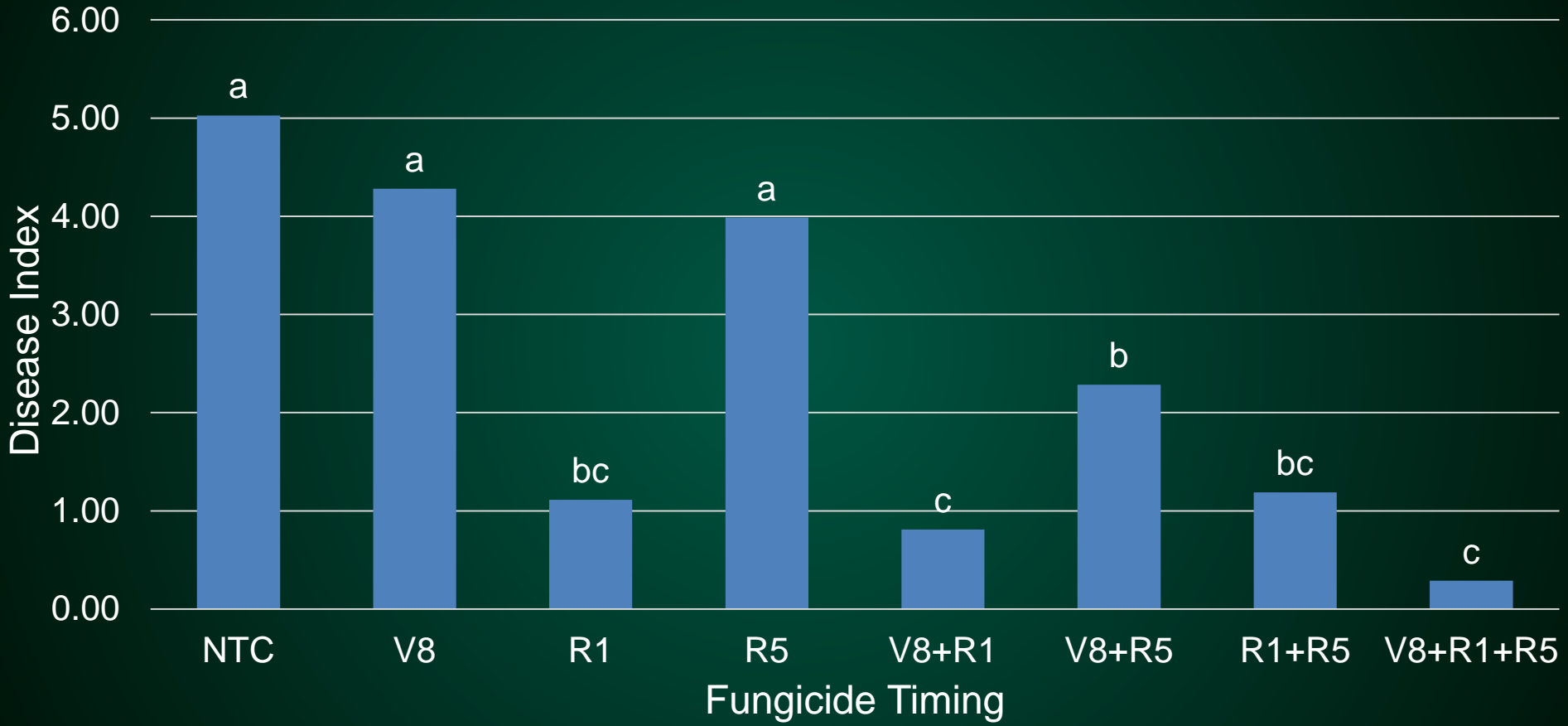
3

3rd lesion

2nd lesion

1st lesion

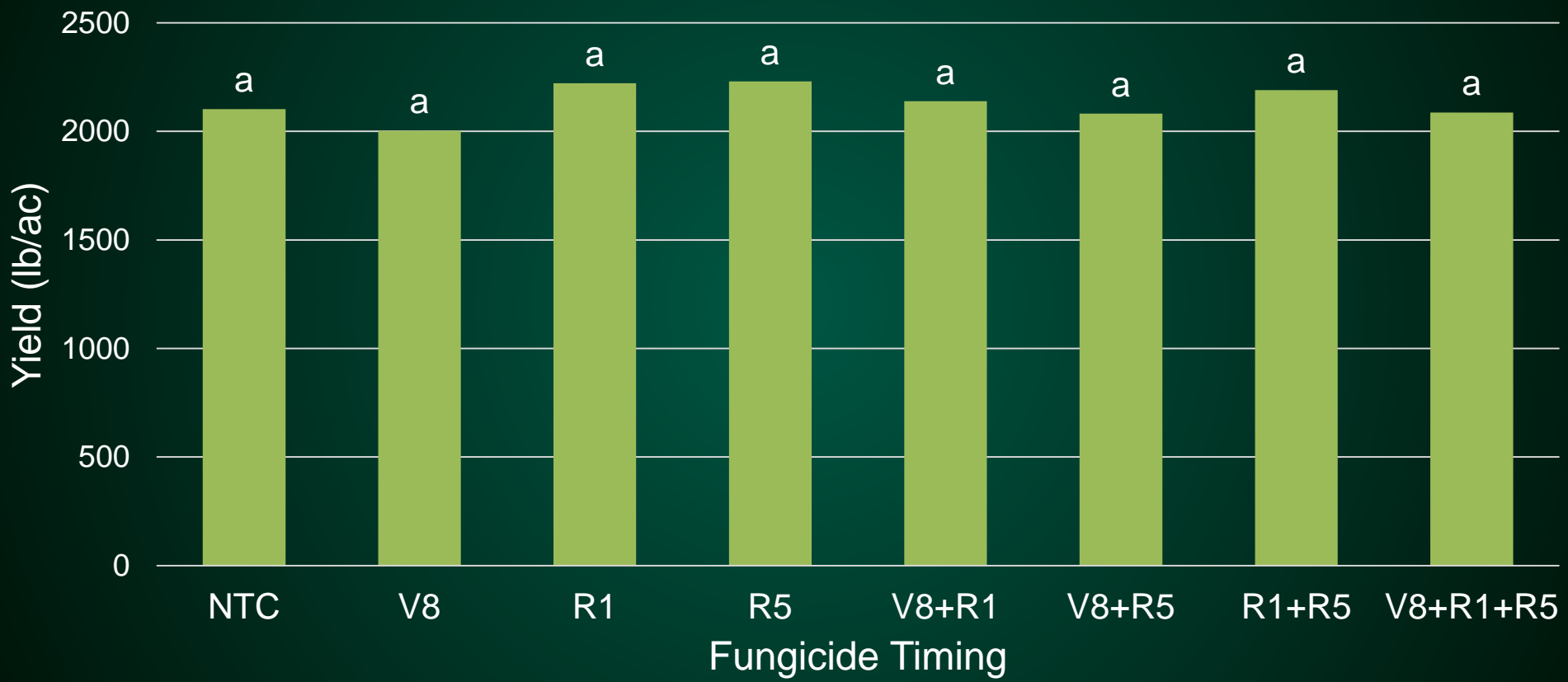




'19 Davenport, ND

Yield x Timing

N4HM354



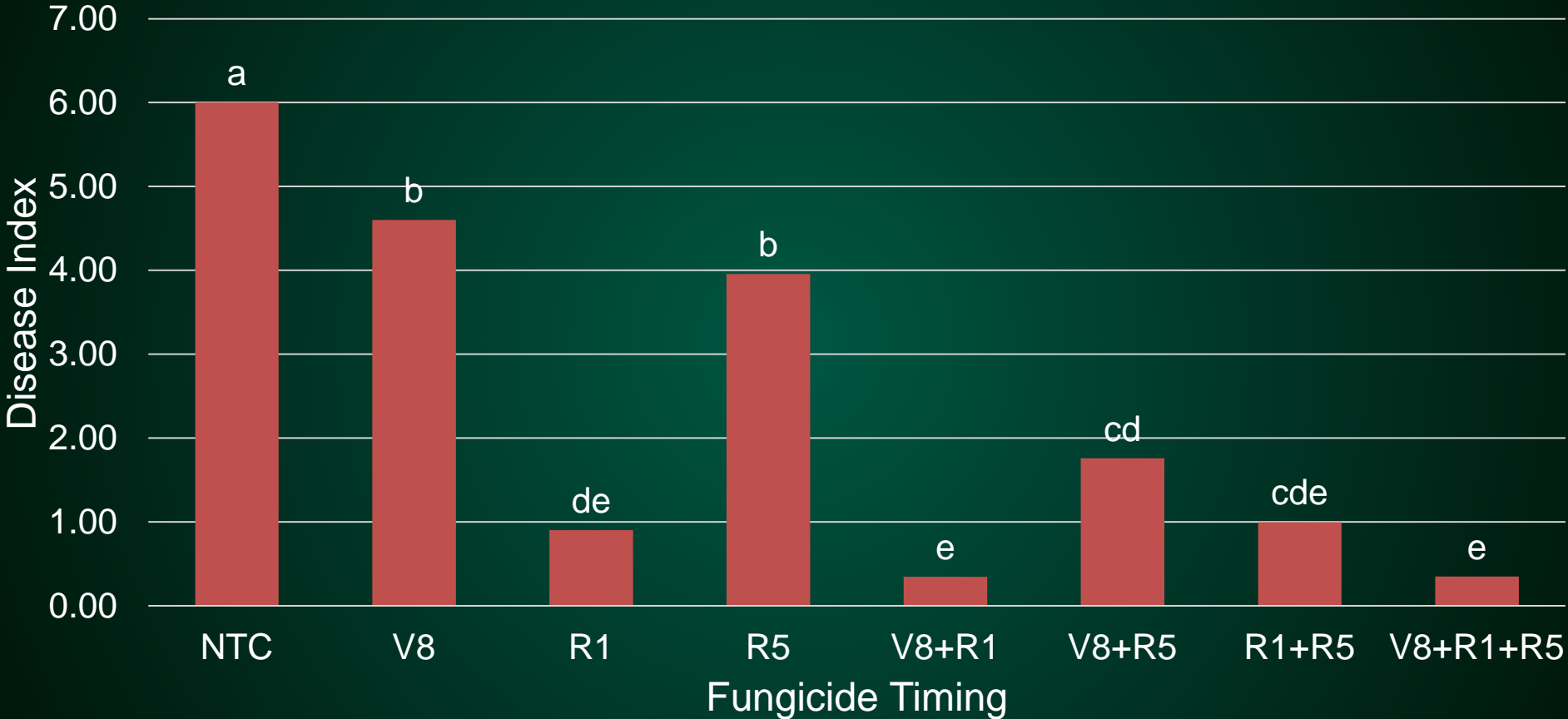
Headline 6fl oz/ac in 20 gal/ac

P=0.93

'19 Davenport, ND

Disease Index x Timing

Camaro II



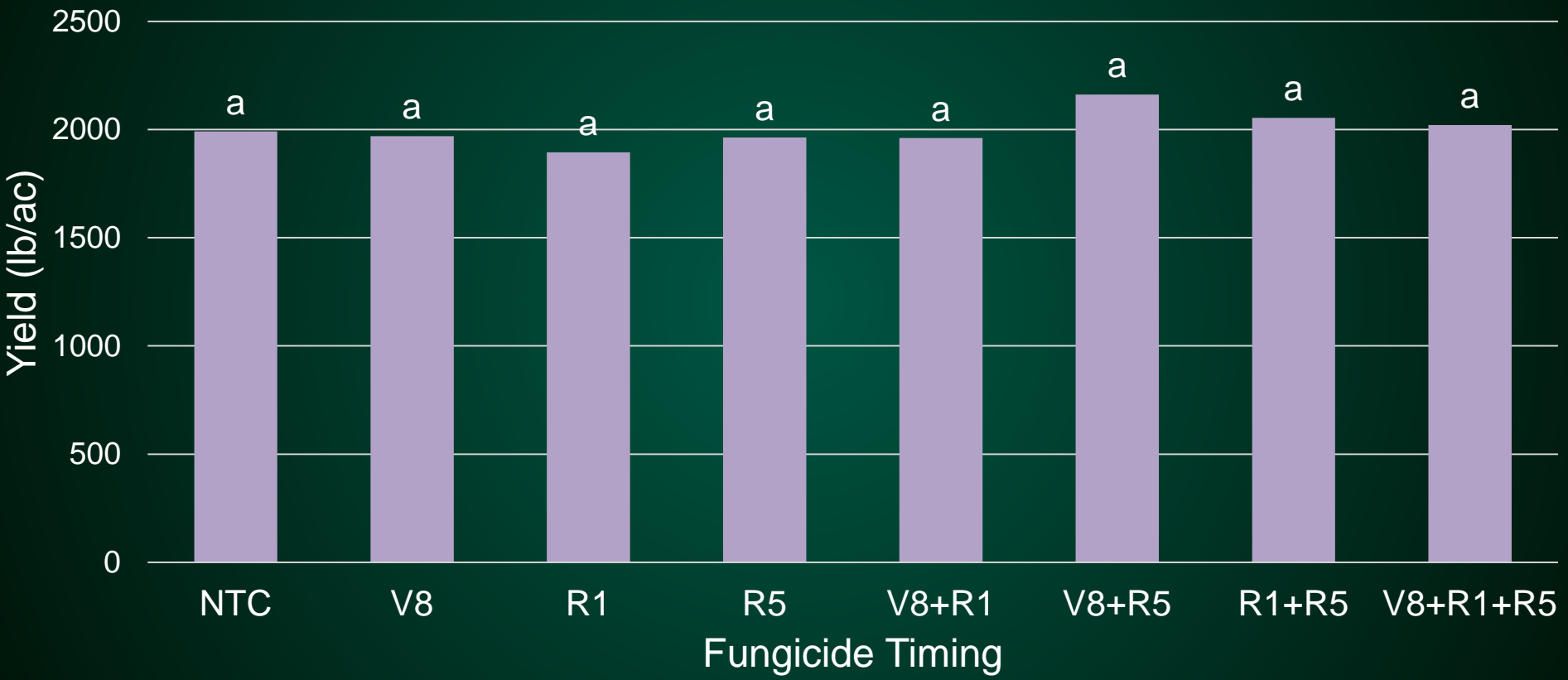
Headline 6fl oz/ac in 20 gal/ac

(P<0.001)

'19 Davenport, ND

Yield x Timing

Camaro II



Headline 6fl oz/ac in 20 gal/ac

(P=0.98)

Efficacy Trials

Materials and Methods

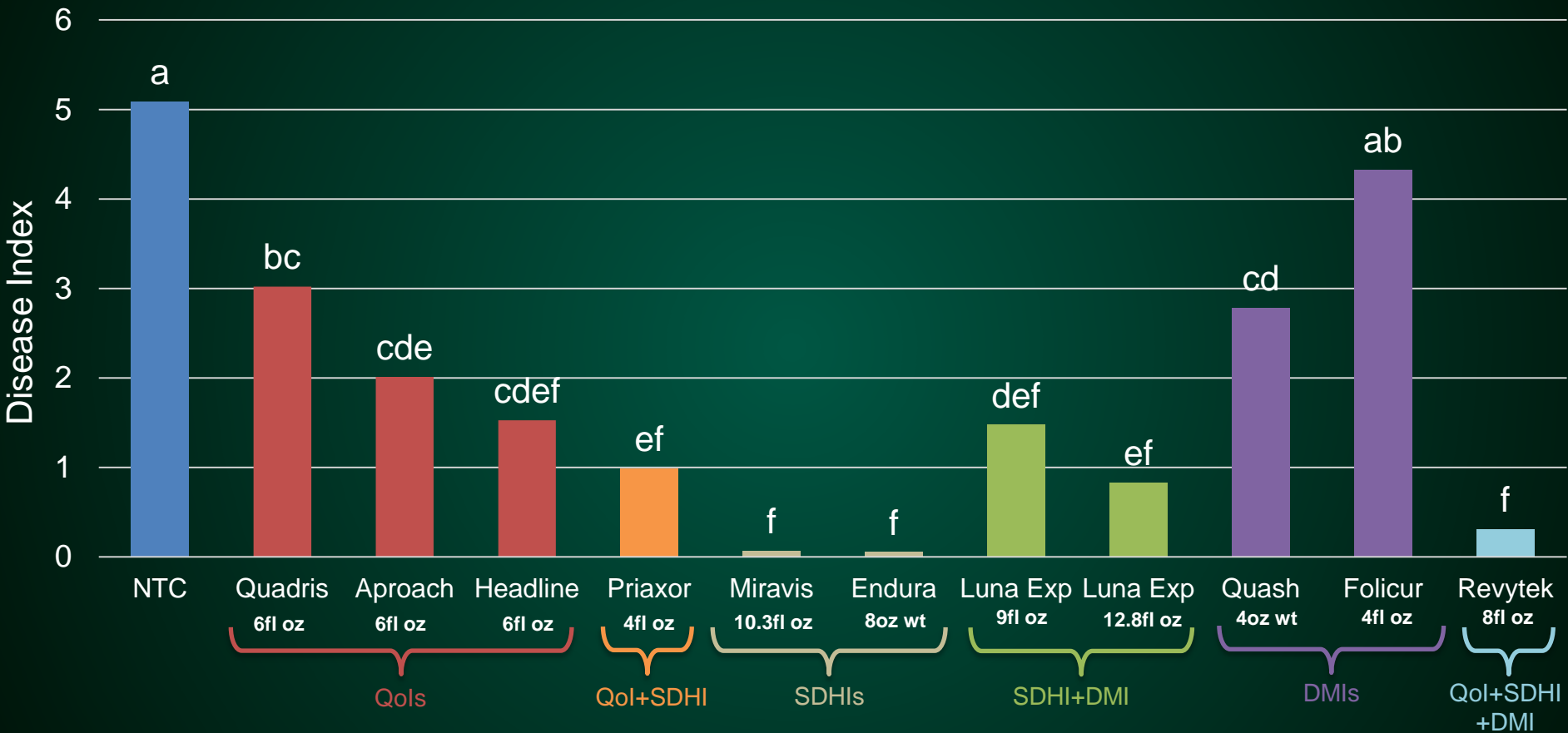
- RCBD with four replications
- Davenport, ND
- Nine different chemicals from three fungicide modes of action (QoIs, SDHIs, and DMIs)
- Applied at R1
- Disease Index = (incidence) x (mean # of lesions/plant)

Product Name	Mode of Action	Chemical	Rate(s)
Headline	QoI	Pyraclostrobin	6 fl oz
Quadris	QoI	Azoxystrobin	6 fl oz
Aproach	QoI	Picoxystrobin	6 fl oz
Priaxor	QoI + SDHI	Pyraclostrobin + Fluxapyroxad	4 fl oz
Miravis	SDHI	Pydiflumetofen	10.3 fl oz
Endura	SDHI	Boscalid	8 oz wt
Luna Experience	SDHI+DMI	Fluopyram + Tebuconazole	9 fl oz + 12.8 fl oz
Folicur	DMI	Tebuconazole	4 fl oz
Quash	DMI	Metconazole	4 oz wt
Revytek	QoI+SDHI+DMI	Pyraclostrobin + Fluxapyroxad + Mefentrifluconazole	8 fl oz

'19 Davenport, ND

Disease Index x Fungicide

N4HM354



Applied at R1 growth stage

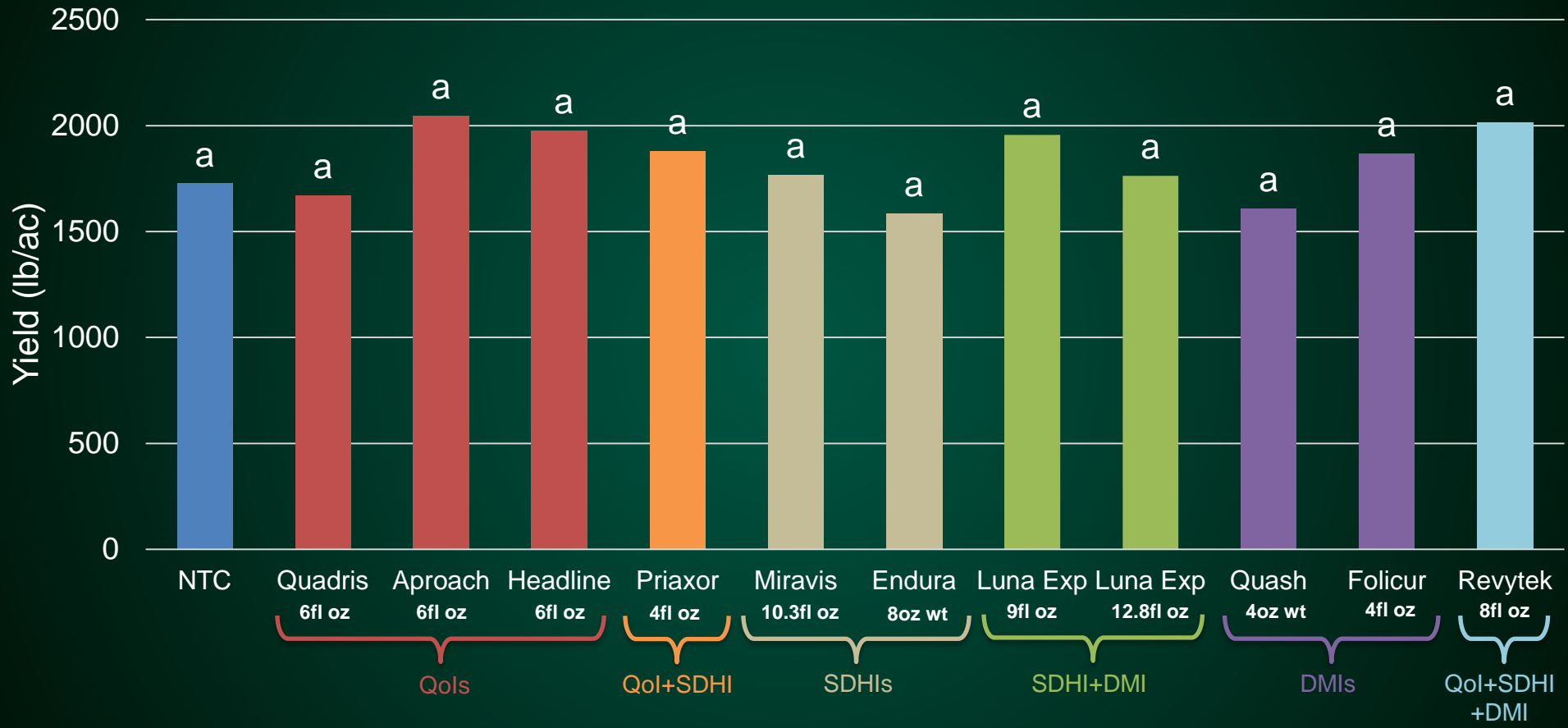
Fungicide

(P ≤ 0.05)

'19 Davenport, ND

Yield x Timing

N4HM354



Applied at R1 growth stage

Fungicide

(P=0.09)

Conclusions for 2019

- All fungicide applications at the R1 growth stage significantly ($P \leq 0.05$) reduced disease
- Nearly all fungicides reduced disease
- Yield was not significantly reduced ($P \leq 0.05$) in any of the trials

Conclusions for three-year study

- 13 year-locations
 - Seven with high disease pressure
- Only one location saw yield differences
- Application at R1 growth stage was most effective
- All fungicides reduced disease
 - SDHIs>QoIs>DMIs

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- Karson Schoening
- Blaine Schatz
- Febina Mathew
- Scott Fitterer
- Dave Carruth

