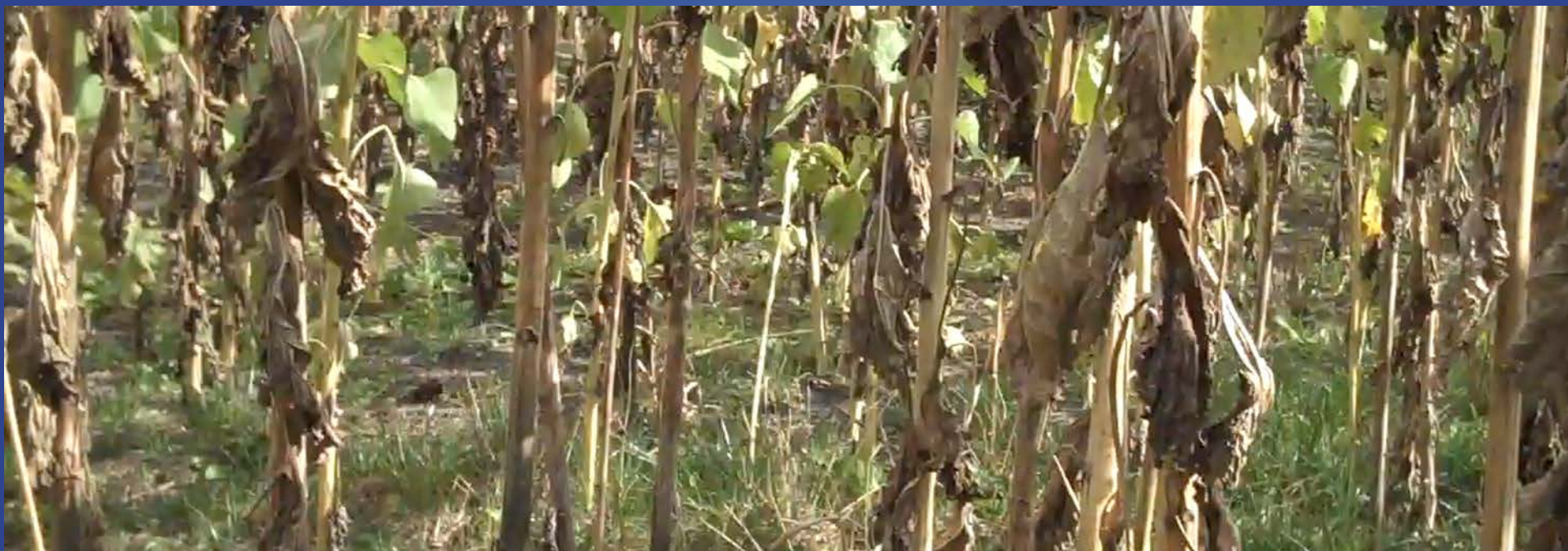


Integrating Host Resistance and Fungicide for management of Phomopsis stem canker of sunflower



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Collaborators/Co-operators

- Collaborators
 - Steve Erikson and Bob Benson (Mycogen)
 - Bill Gilbert (Syngenta seeds)
 - Aaron Franzen (Syngenta)
 - Joel Schaefer (CHS)
 - Michael McCarville (Bayer)
 - Dan Waldstein (BASF)
 - Keith Johnson (DuPont)
 - Jeremy Klumper (NuSeed)
- Co-operators in South Dakota
 - Tom Young
 - Dustin Smith
 - Dillon Baloun

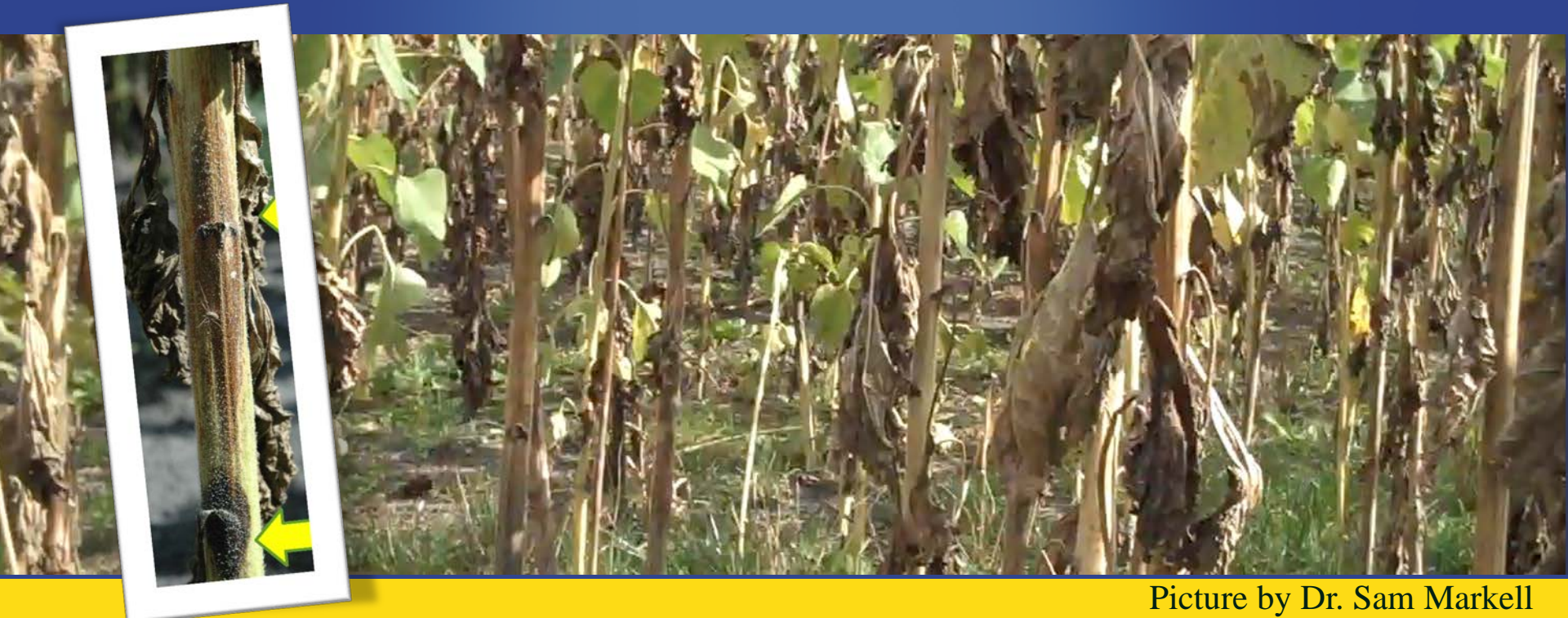


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Current Problems

- Phomopsis stem canker continues to be of concern in 2015.
 - Disease incidence was between 40 to 100% in commercial fields (H. Kandel and T. Gulya, 2015 NSA survey).



Current Problems

- Limited management options
- Most commercial hybrids are susceptible to Phomopsis stem canker.
 - Yield reduction is similar for both hybrids (Mathew et al. 2015).



Current Problems

- Previous research
 - In 2014, fungicides were investigated in North Dakota and Nebraska (S. Markell and R. Harveson, *unpublished*).
 - Results showed fungicides alone may be inadequate.



In 2015

Objective:

Evaluate an integrated approach to manage Phomopsis stem canker.

Materials and methods:

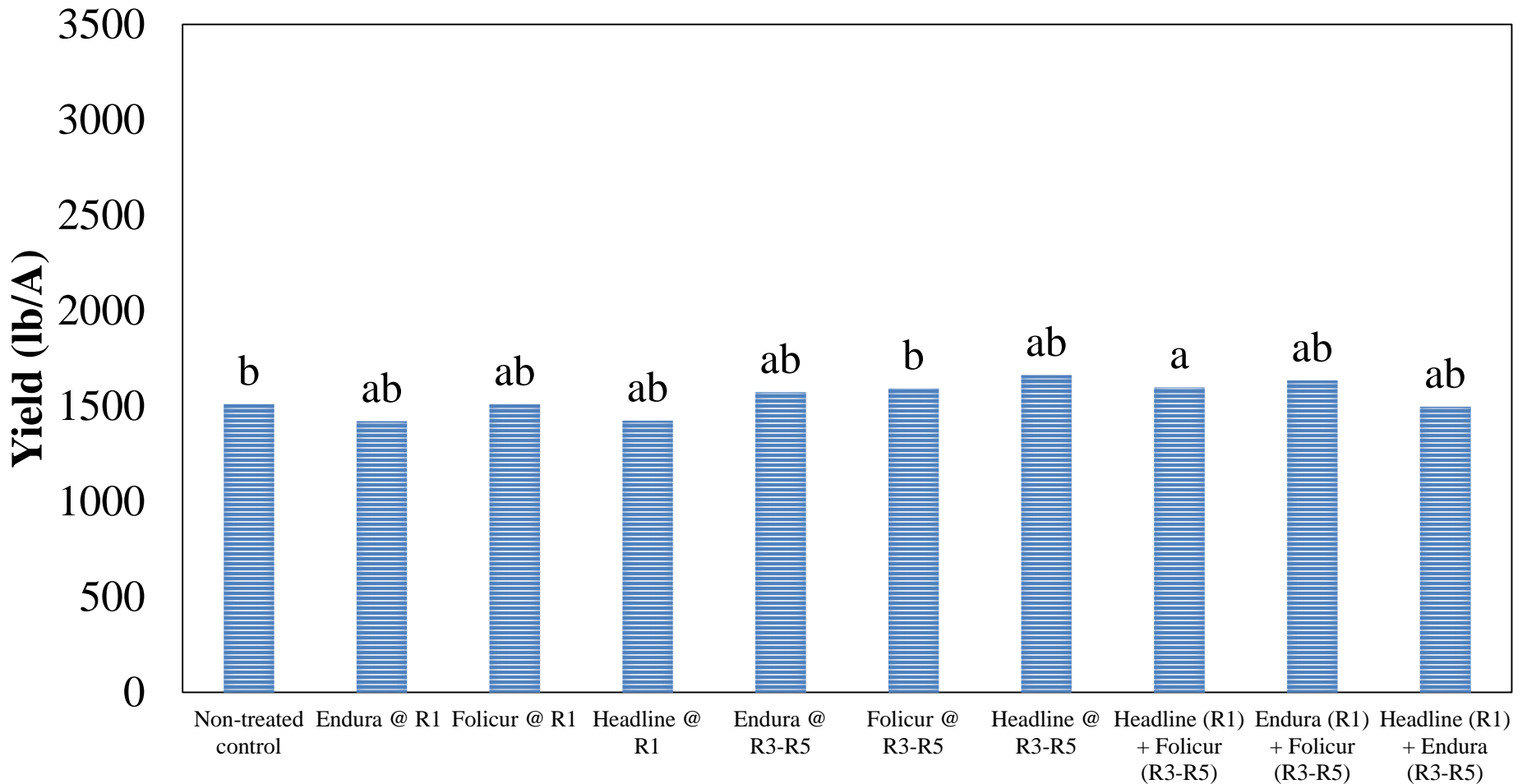
- A total of eight locations established in SD, MN and NE
- Susceptible and tolerant hybrids solicited from companies
- Fungicide applications at growth stages (V12-R1, R1-R3, R3-R5).
- Disease was evaluated at R5 or later (after flowering).
- Data analyses performed in SAS v9.3.







(LSD = 276.1; $P > 0.05$)



Fungicide applications



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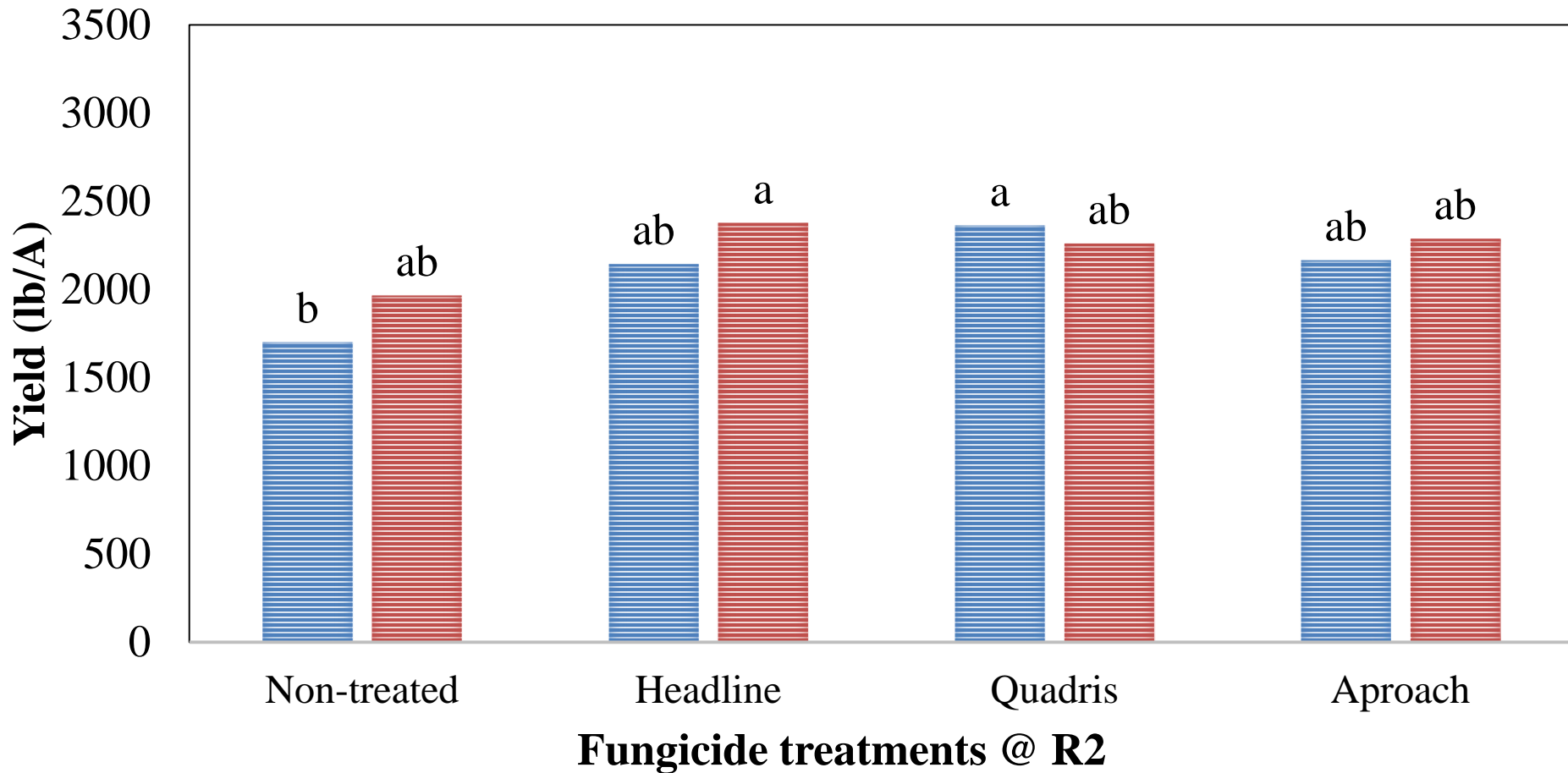
- Scottsbluff, NE
- Fungicides at low labeled rates



Rothsay, MN

■ Susceptible ■ Resistant

(LSD = 632.28; $P > 0.05$)

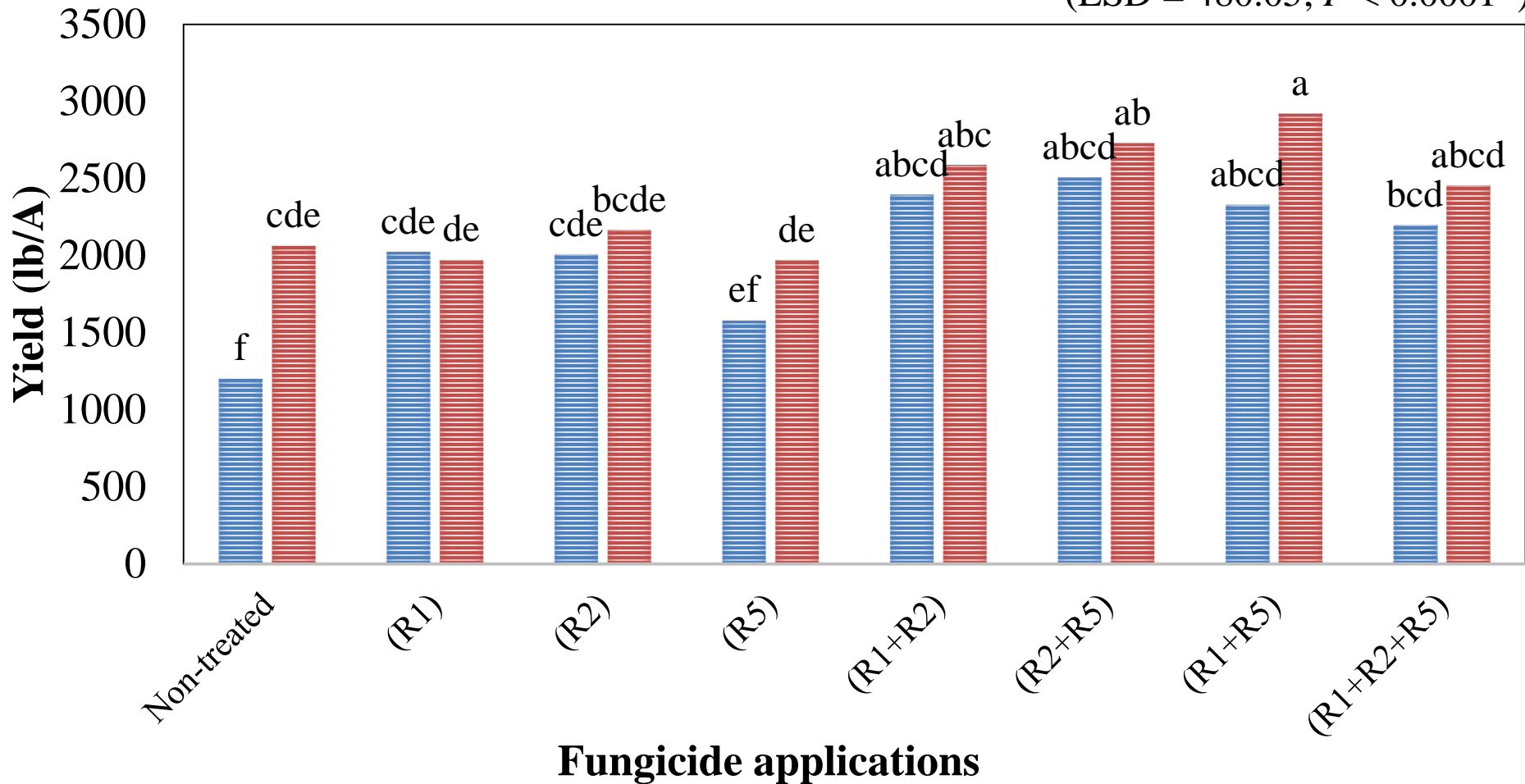


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- Rothsay, MN
- Mycogen hybrids
- Fungicides @ 6 fl oz/A

■ Susceptible ■ Resistant

(LSD = 480.05; $P < 0.0001^*$)



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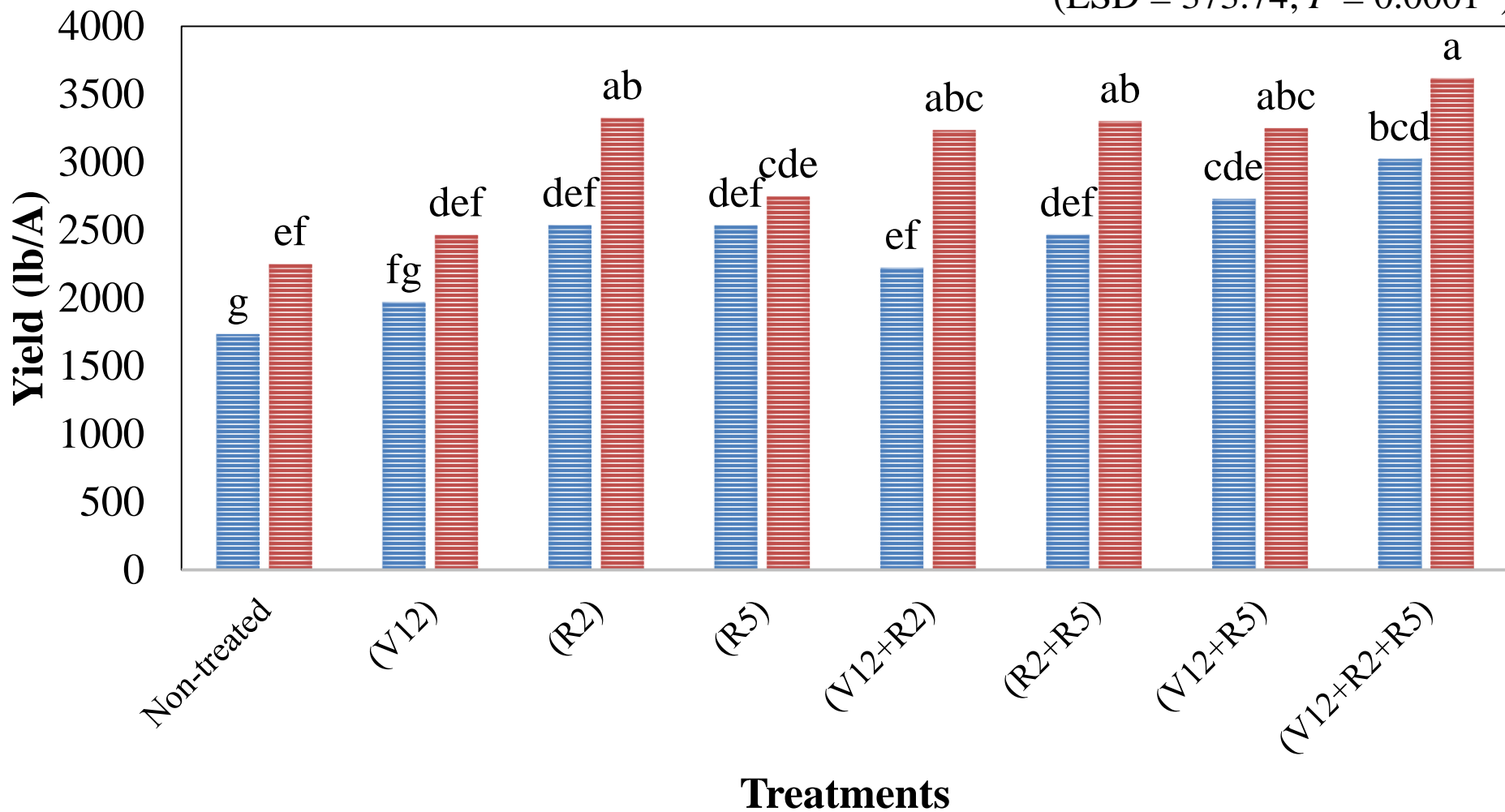
- Rothsay, MN.
- Headline @ 6 fl oz/A (Pyraclostrobin, BASF)
- Mycogen hybrids.



Hazel, MN

■ Susceptible ■ Resistant

(LSD = 373.74; $P = 0.0001^*$)



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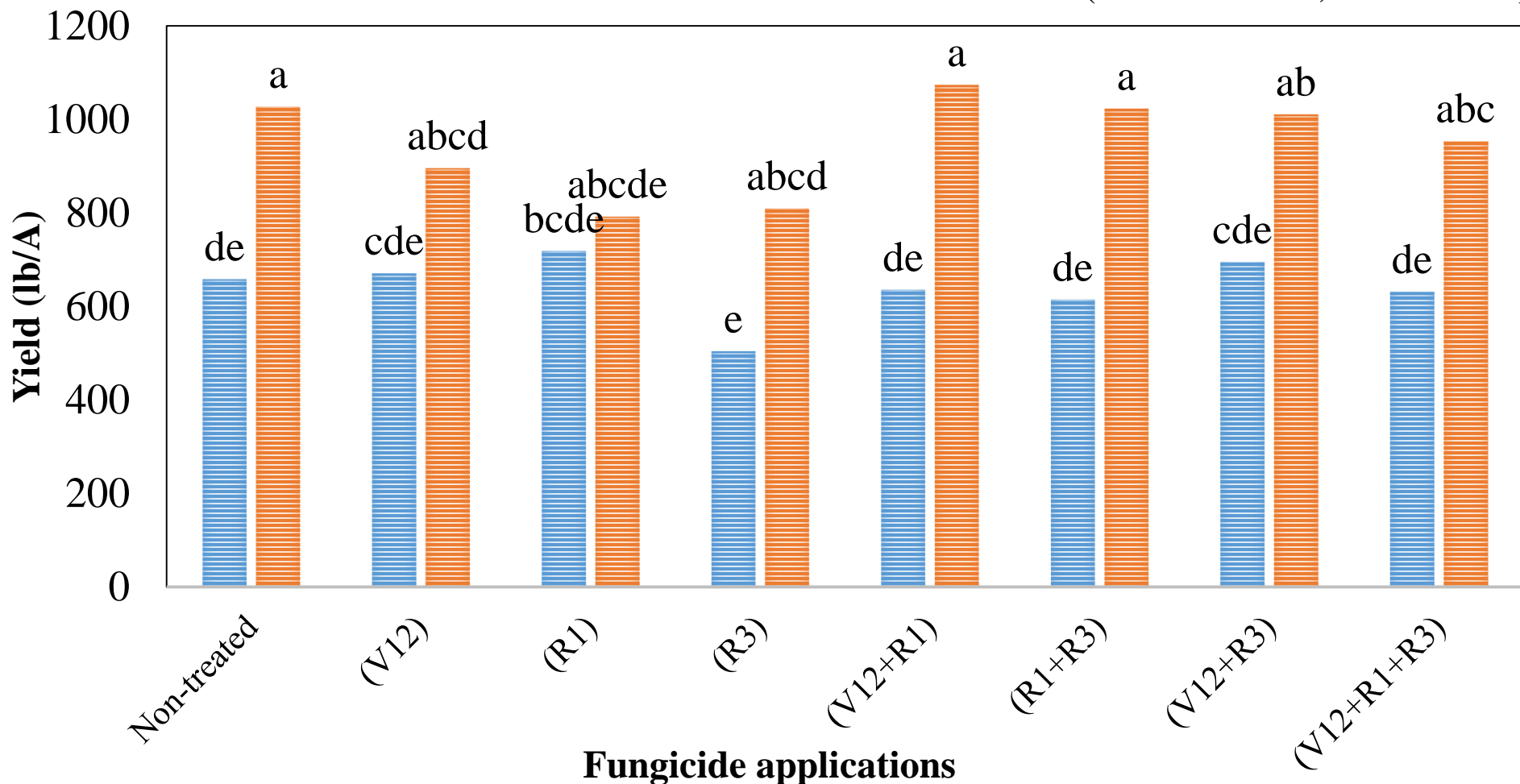
- Hazel, MN.
- Headline @ 6 fl oz/A (Pyraclostrobin, BASF)
- CHS hybrids.

Brookings, SD



■ Susceptible ■ Resistant

(LSD = 295.16; $P = 0.0018^*$)



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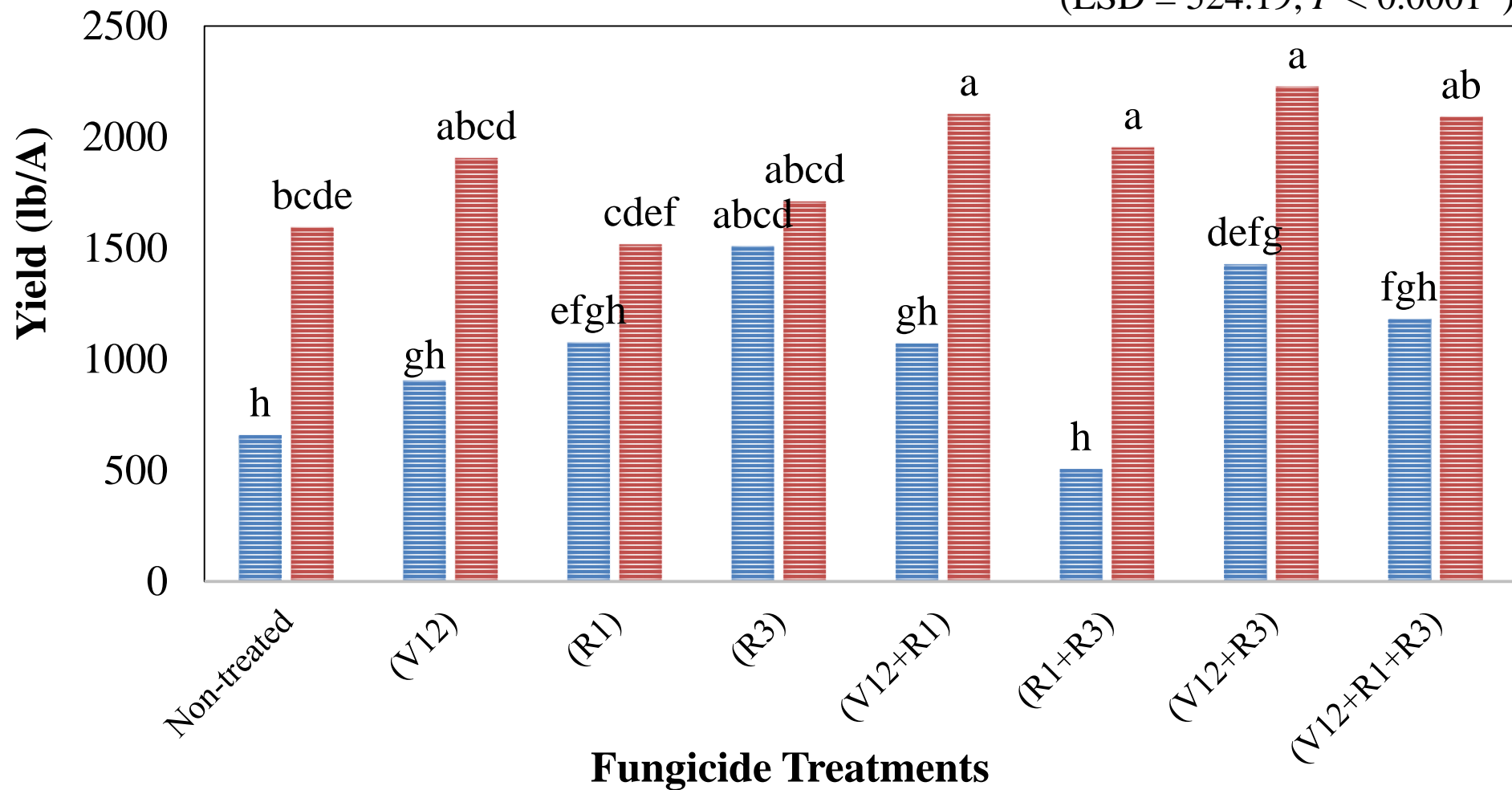
- Brookings, SD
- Quadris @ 6 fl oz/A (Azoxystrobin, Syngenta)
- CHS hybrids.



Highmore, SD; Cooperator - Mr. Dillon Baloun

■ Susceptible ■ Resistant

(LSD = 524.19; $P < 0.0001^*$)



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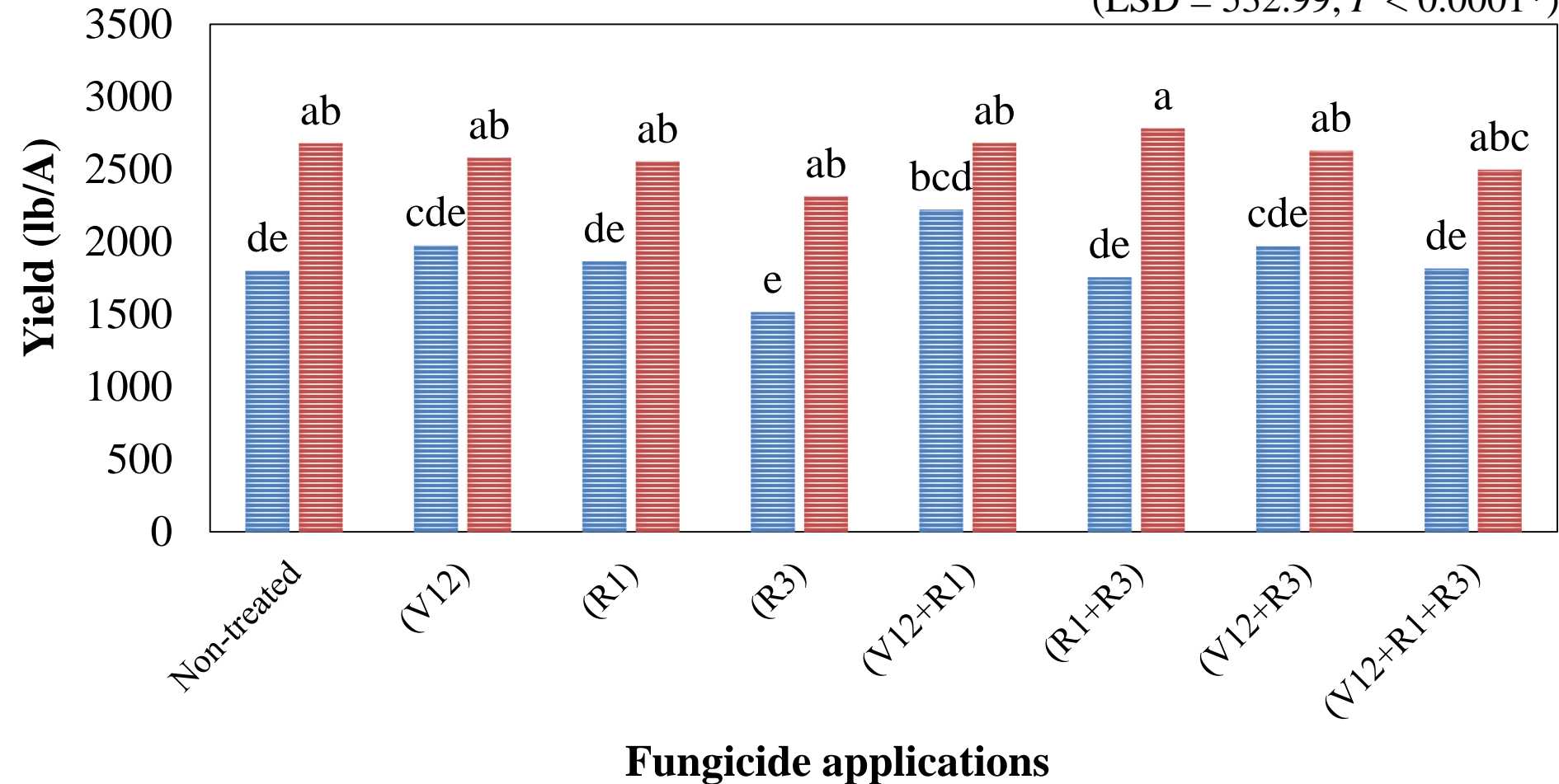
- Highmore, SD.
- Aproach @ 6 fl oz/A(Picoxystrobin, DuPont)
- Syngenta hybrids.



Onida, SD; Cooperator - Mr. Tom Young (Mycogen seeds)

■ Susceptible ■ Resistant

(LSD = 532.99; $P < 0.0001^*$)



Fungicide applications

- Onida, SD.
- Priaxor @ 4 fl oz/A (Fluxapyroxad + Pyraclostrobin, BASF)
- Mycogen hybrids.



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Summary

- Symptoms of Phomopsis stem canker observed after flowering
- Choosing a resistant over susceptible hybrid
 - Yield increase ≥ 400 lbs/A
- Fungicide
 - What to spray?
 - Strobilurin fungicides (=FRAC Group 11) offer control (Gilley et al. 2015)



Summary

- Results in 2015 suggest
 - On a susceptible/resistant hybrid
 - Fungicide applications at R1-R3 may be considered
- We hope to repeat the study in 2016 (*Pending funding*)



Acknowledgements

