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Delineating Management Zones for Variable Rate Fungicide Applications

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Logic

- Fungicide seldom needs applied to the whole field
  - Yield potential
  - Variability of disease within a field

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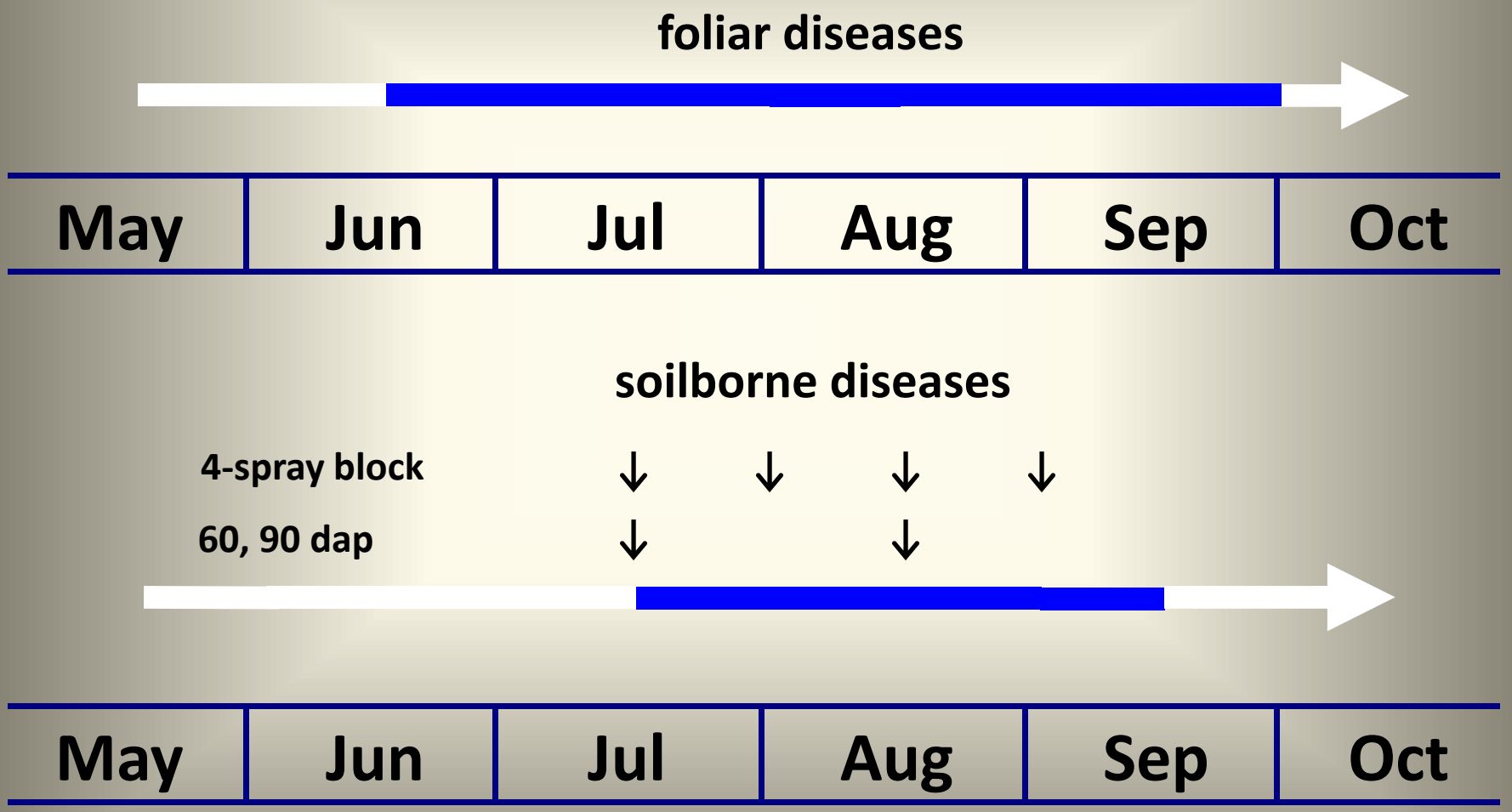
Peanut soilborne diseases

- Field history
- Variety
- Rotation
- Fungicide program

Fungicide Use Patterns



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Fungicides for Sclerotinia blight

- Endura - also controls leaf spot
- Omega - also controls southern blight
- Current recommendation is to apply at first sign of disease and then on demand

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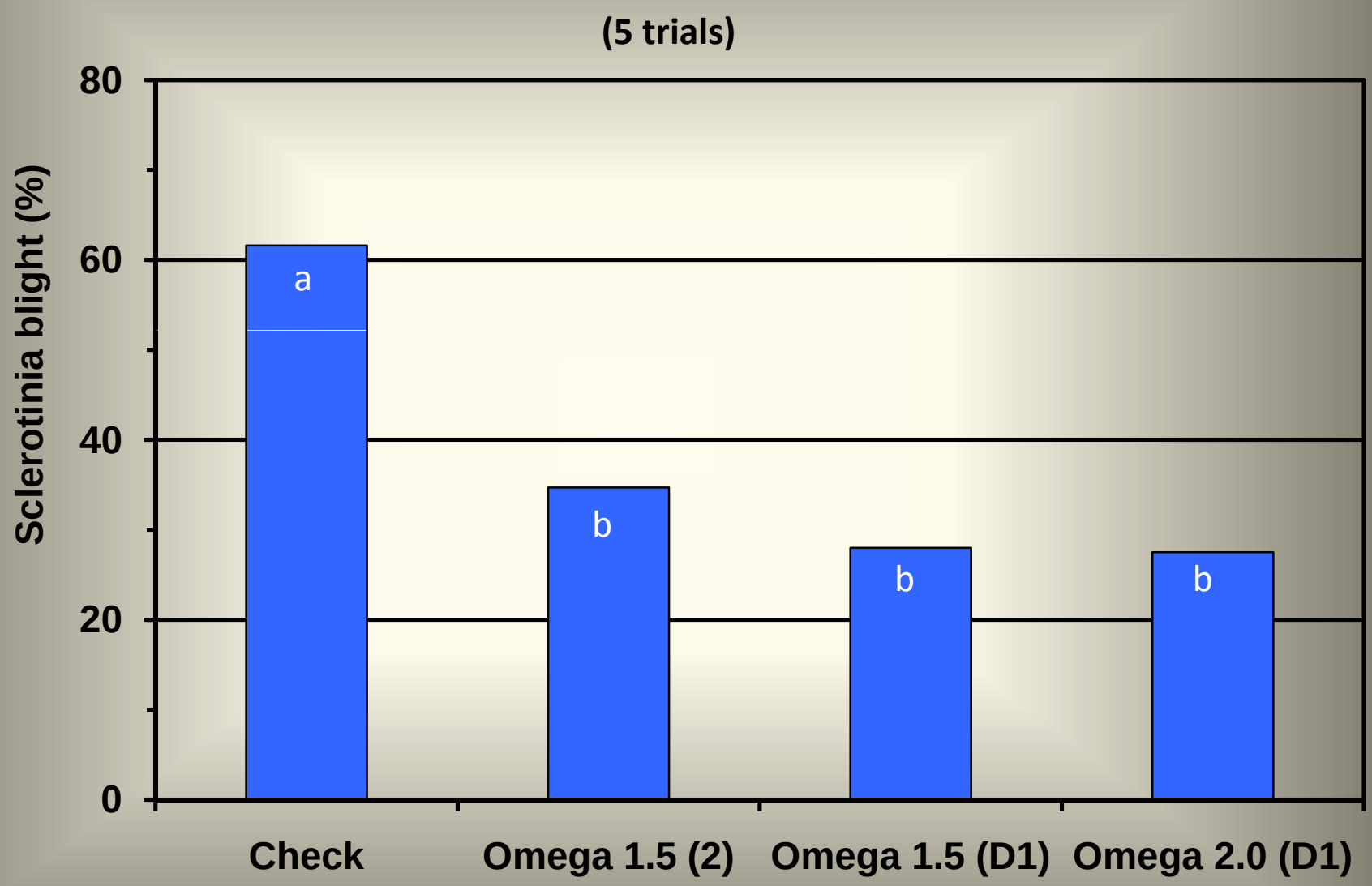
Sclerotinia Blight Control: 2002-2007



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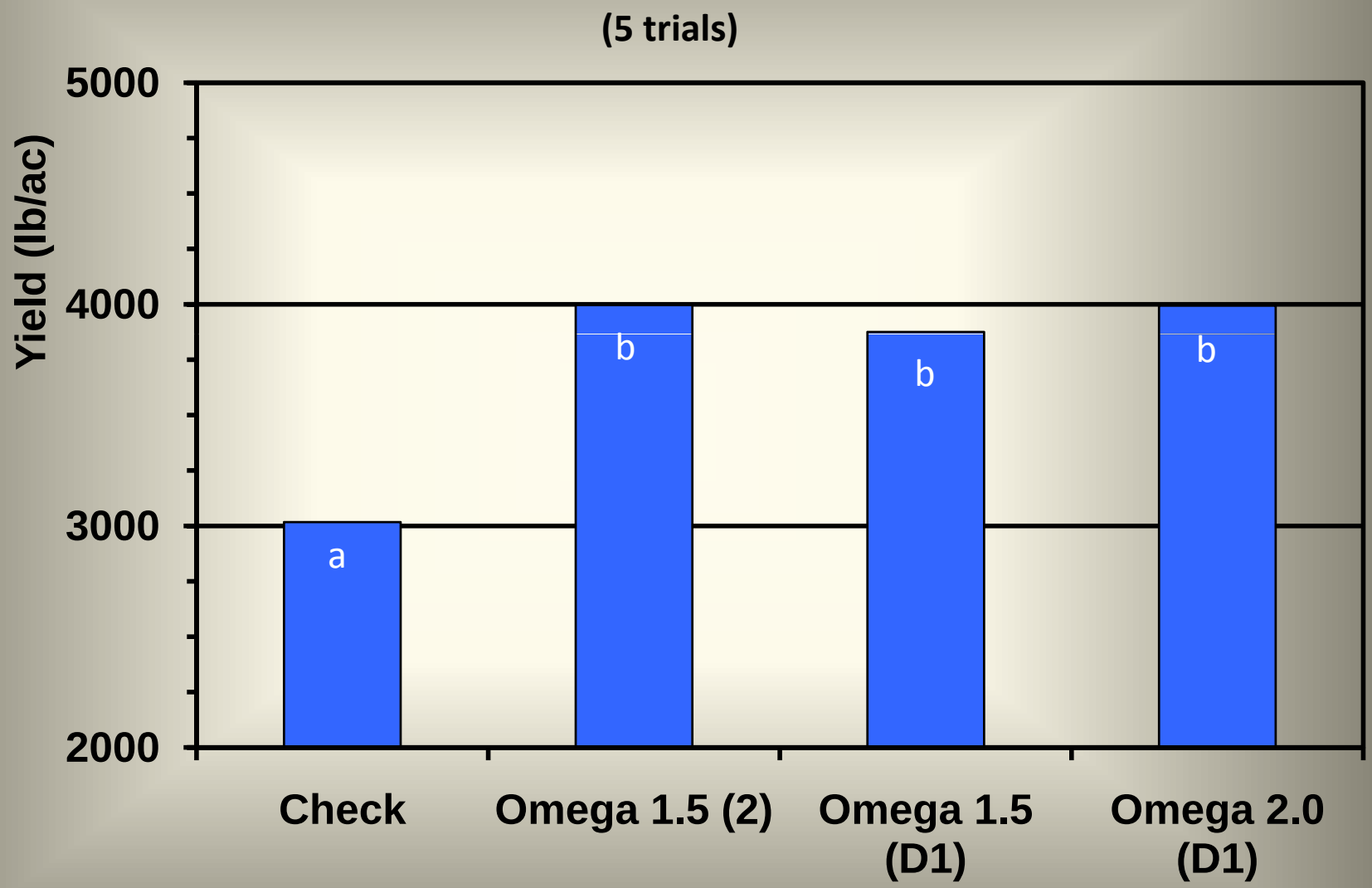
Sclerotinia Blight Control: 2002-2007



Delineating Mgt. Zones

- What factors affect soilborne diseases?
  - Soil water content
    - Elevation
    - Soil type
  - Canopy cover
  - Humidity
  - Precipitation
  - Temperature

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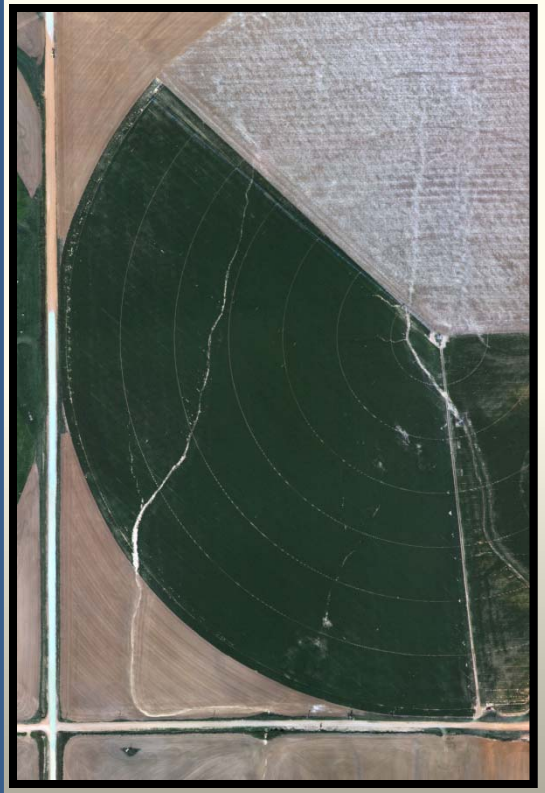
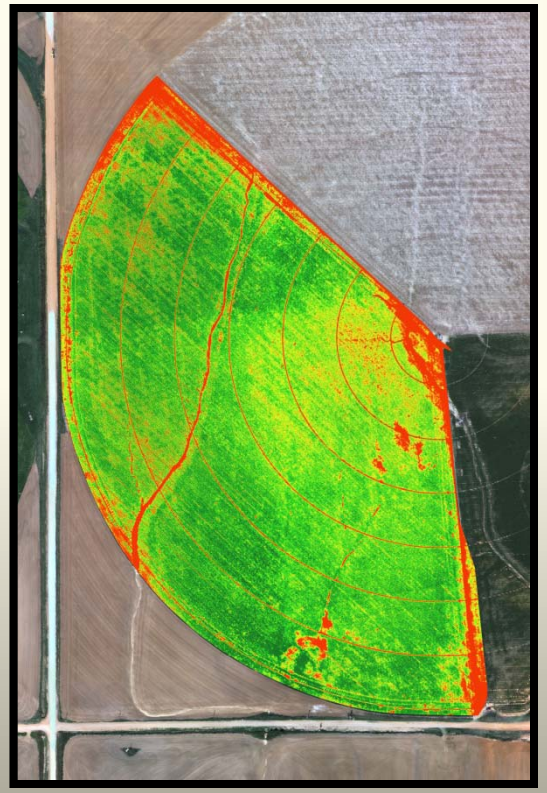
First Option – Aerial Imagery



Color

NIR



NDVI

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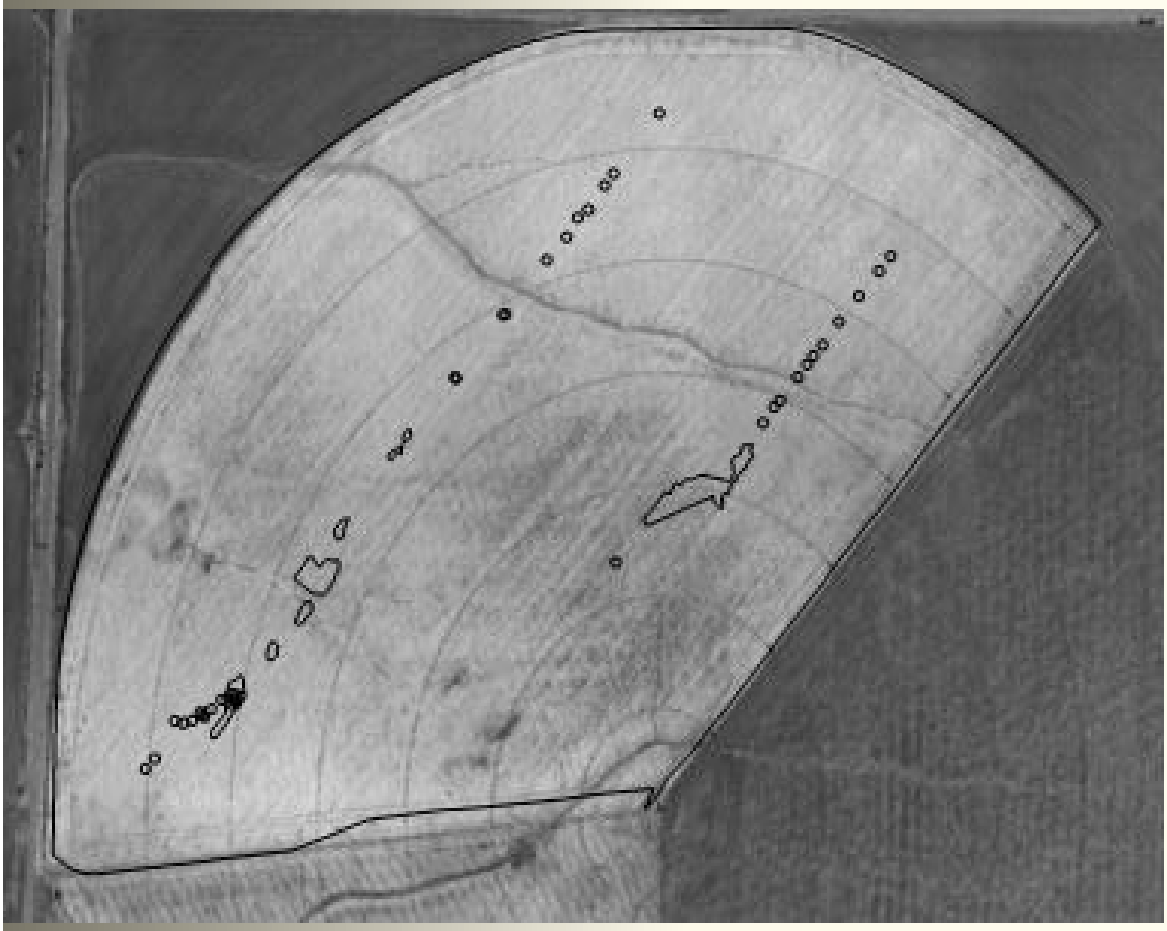

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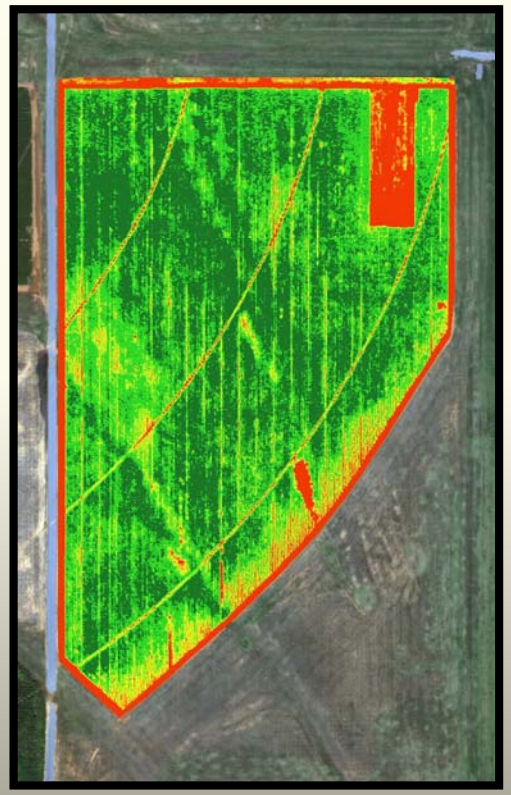
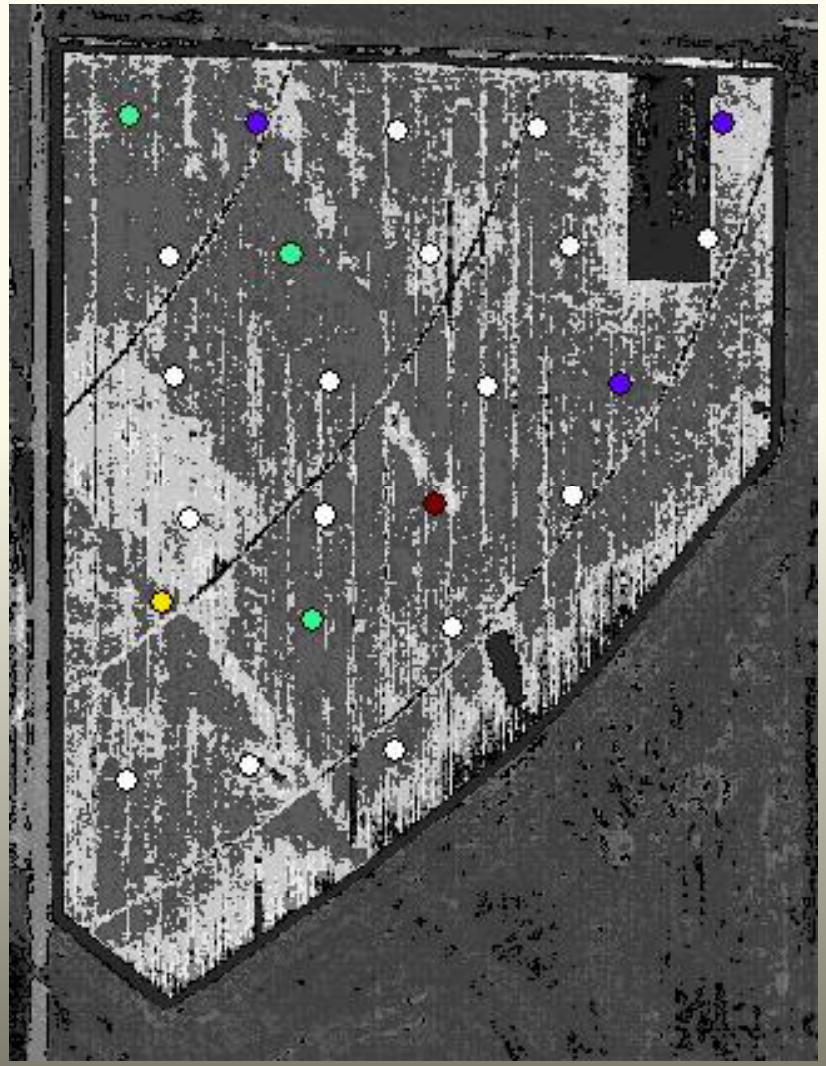
Color

NIR



NDVI



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2010

- EC
- Elevation
- Soil samples

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Soybean Fungicide Application

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Strobilurin fungicides

- Frac MOA Group 11
- Inhibit fungal respiration
- Broad spectrum
  - rusts
  - leaf spots
  - powdery mildews
- Labeled for disease control
- New label for “plant health”

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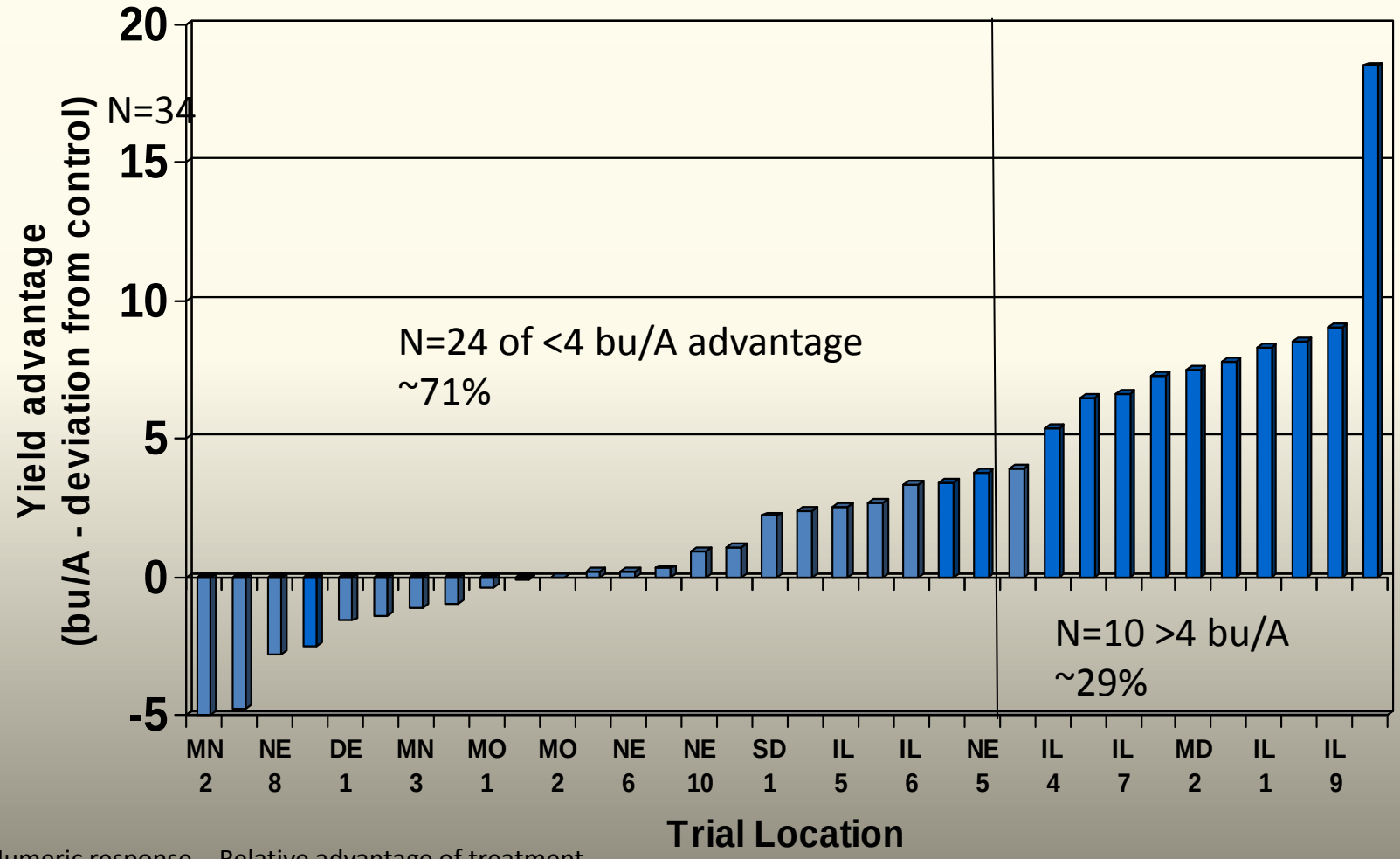
Soybean Yield Response to Headline®, 2005



Numeric response – Relative advantage of treatment
Little to no disease in all tests

Significantly different from untreated at that location

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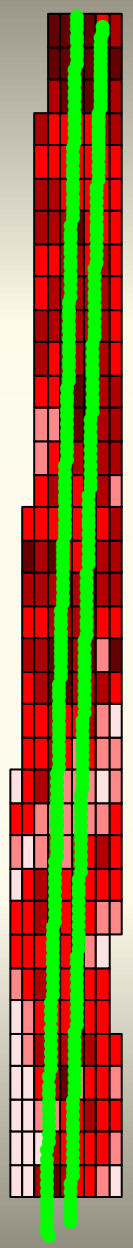

Fungicide – 37 bu/ac
No Fungicide – 31 bu/ac

Tiger Headline
Clipped User-Defined Grid With Points Stats
7.117 - 19.974
19.974 - 28.257
28.257 - 34.688
34.688 - 42.588
42.588 - 65.651

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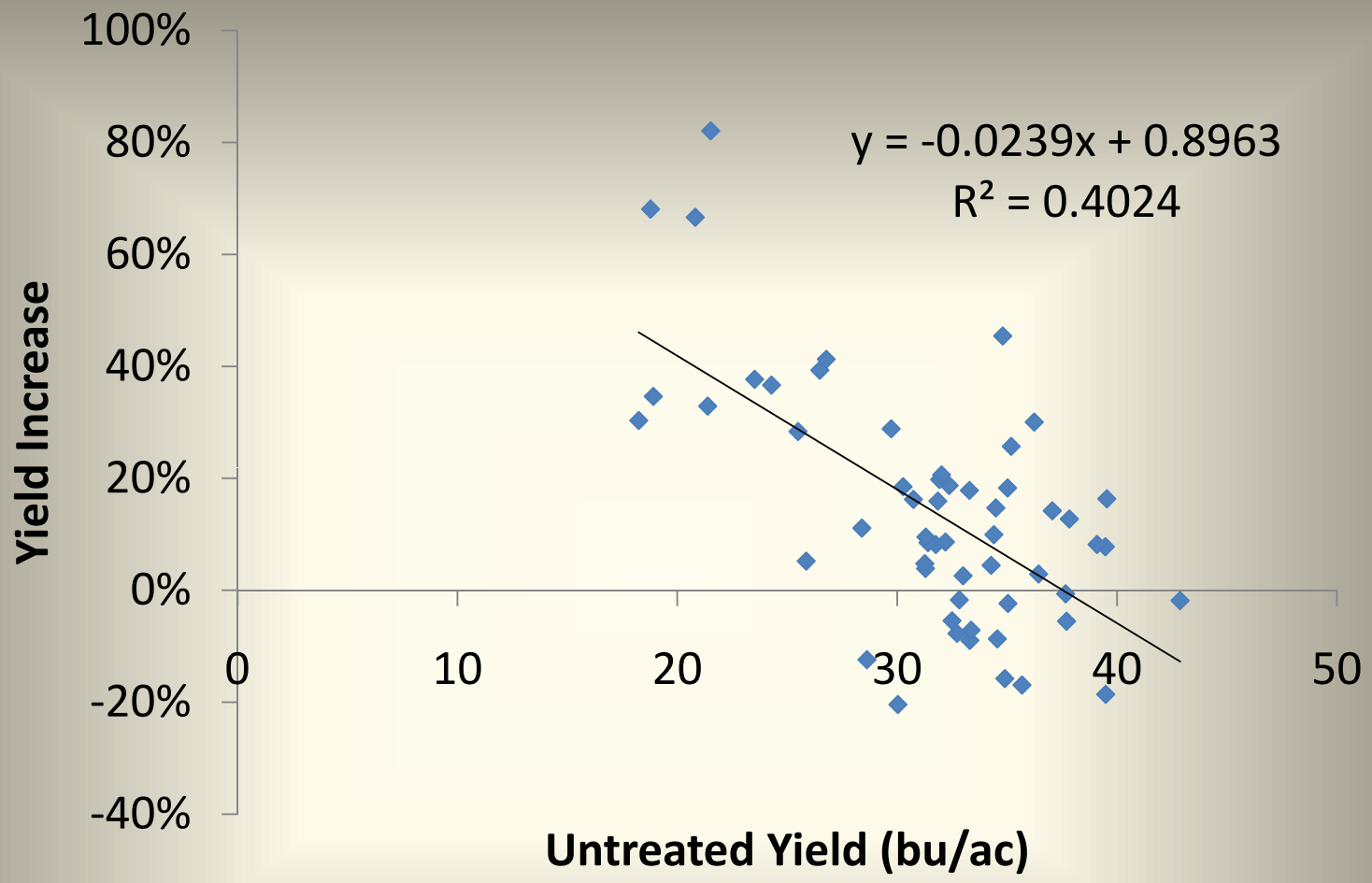

Fungicide response was greater at lower yields.

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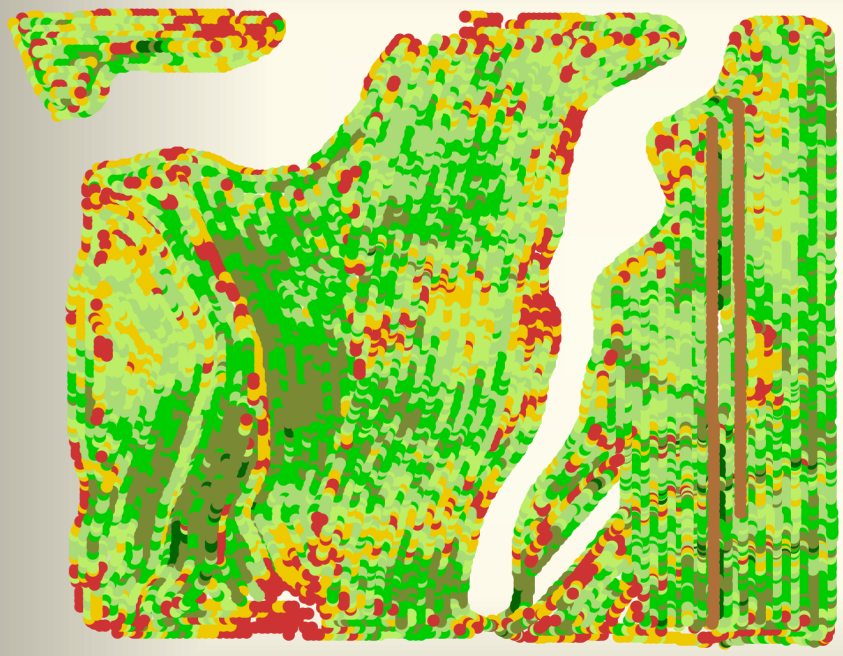
Fungicide – 35 bu/ac
No Fungicide – 29 bu/ac



- reed headline.shp

reed harvest.shp

- 5.008 - 14.324
- 14.324 - 21.793
- 21.793 - 28.248
- 28.248 - 34.15
- 34.15 - 40.668
- 40.668 - 52.698
- 52.698 - 79.564
- conley 120 harvest.shp

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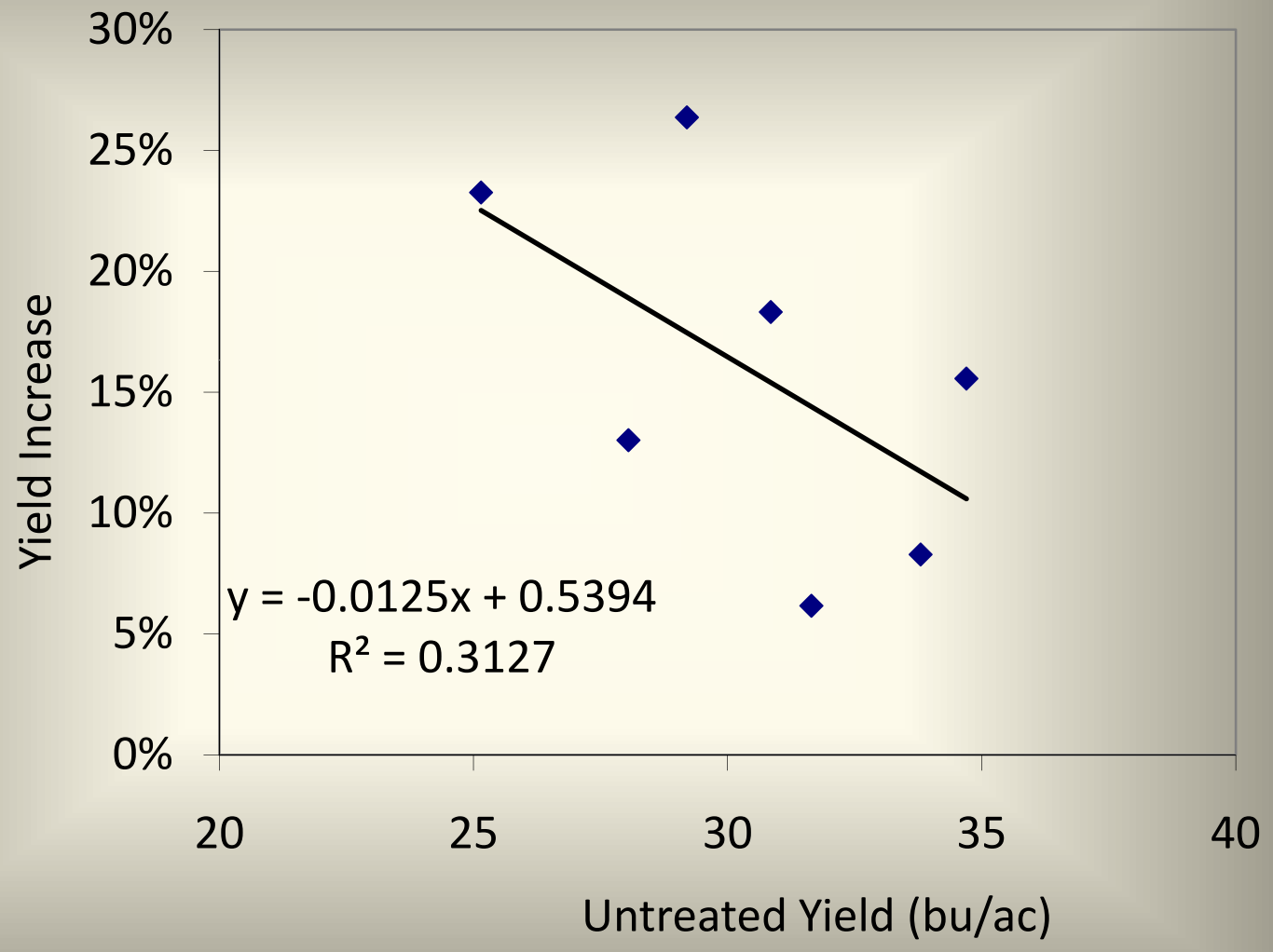

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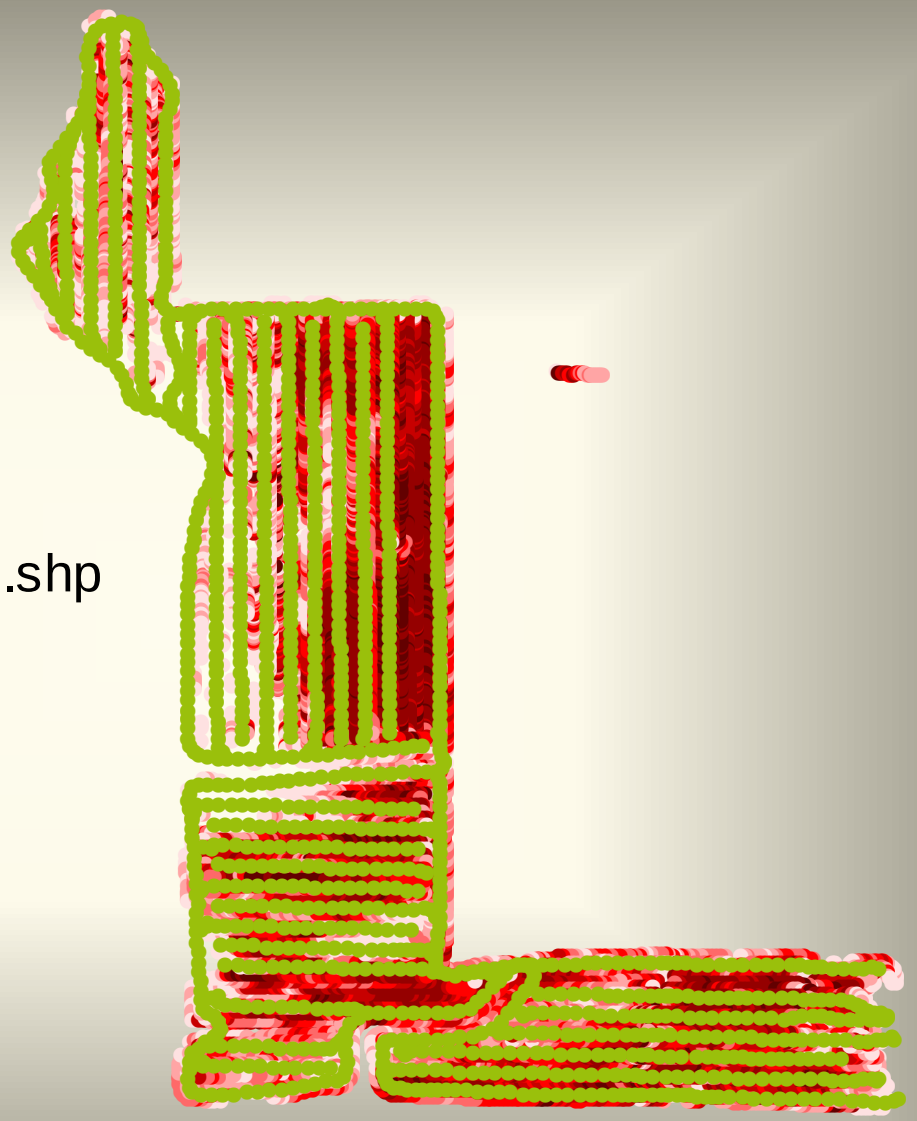
- conley 125 punch.shp

conley 125 harvest.shp

- 5 - 12
- 13 - 19
- 20 -25
- 26 - 33
- 34 - 40
- 41 - 48
- 49 - 79



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Fungicide – 45 bu/ac
No Fungicide – 37.6 bu/ac

- john osu test punch.shp

john harvest.shp

- 5.013 - 17.85
- 17.85 - 27.09
- 27.09 - 34.316
- 34.316 - 40.044
- 40.044 - 45.288
- 45.288 - 52.053
- 52.053 - 79.329
- reed headline.shp
- reed harvest.shp

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Fungicide Left – 38.0 bu/ac
Fungicide Right – 37.4
No Fungicide – 36.5 bu/ac

bethel punch.shp
bethel harvest.shp
- 5 - 15.114
- 15.114 - 23.42
- 23.42 - 30.624
- 30.624 - 36.881
- 36.881 - 42.774
- 42.774 - 50.689
- 50.689 - 79.893
- conley 120 harvest.shp

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Summary

- Establishing a yield baseline is important to effectively evaluate on-farm trials.
- Delineating management zones with previous year's images looks feasible to treat soilborne diseases.
- Response to fungicide applications for "plant health" may be affected by yield potential.

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Thank you!

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