

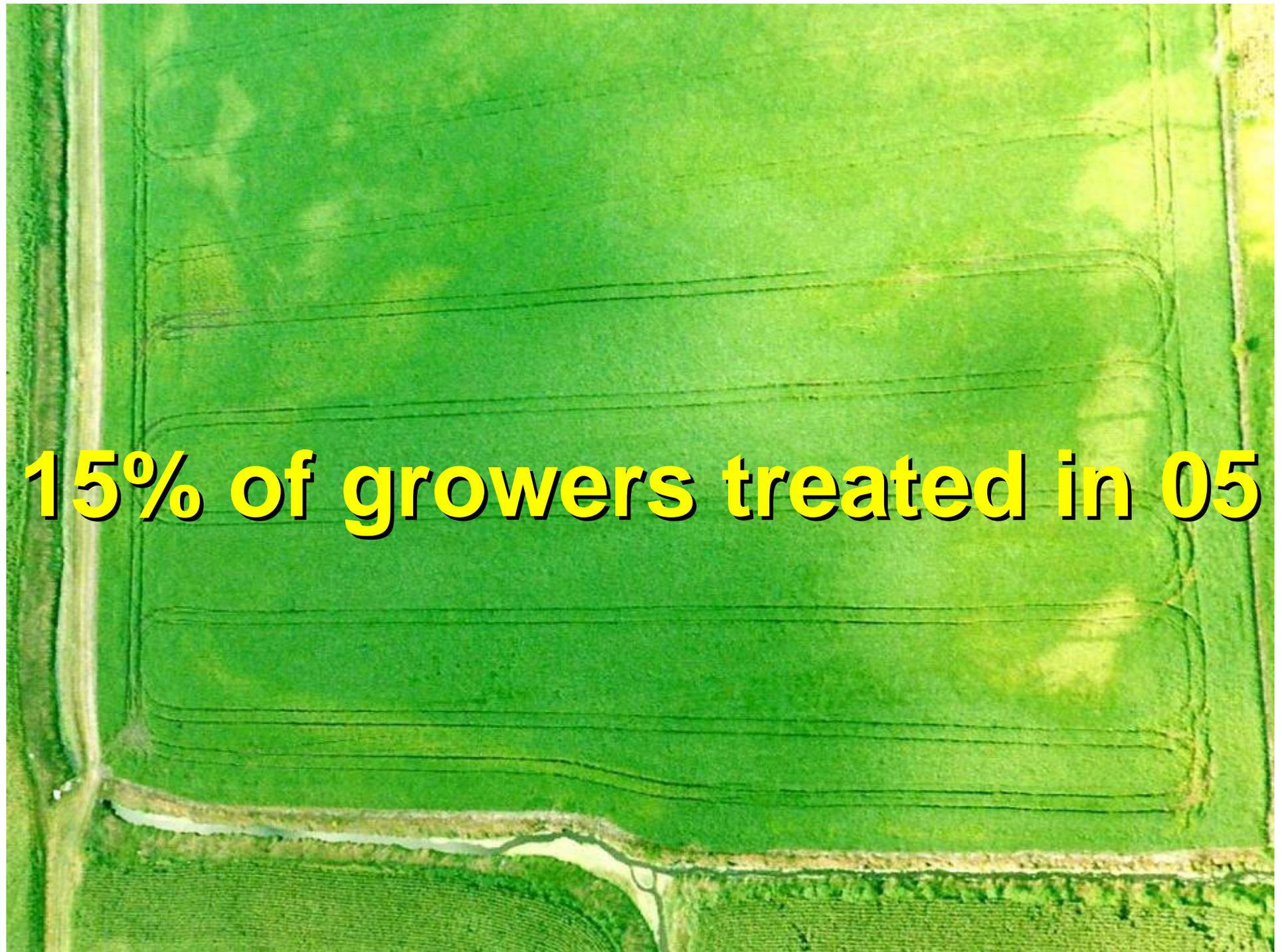
Deposition and Efficacy of Electrostatic vs. Conventional Fungicide Spray Systems



Shawn P. Conley and Greg Shaner

Purdue University

David Eby: AGRIFLITE



15% of growers treated in 05

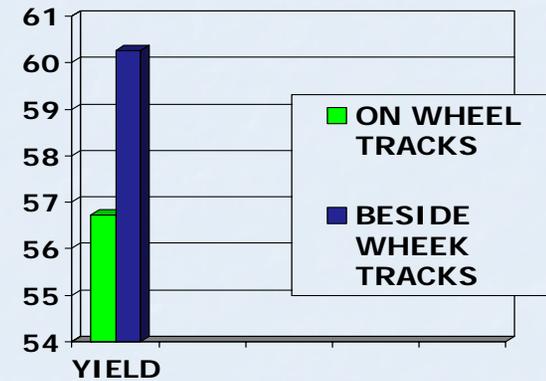
Yield loss by boom width

Boom width	Yield loss
30	6.0%
60	3.0%
90	2.1%
120	1.5%



Wakarusa, In 9.26.06

Soybean Fungicide Applications



Yields checked with weight wagon. Farmer lost 4 bushel due to wheel tracks in that swath.

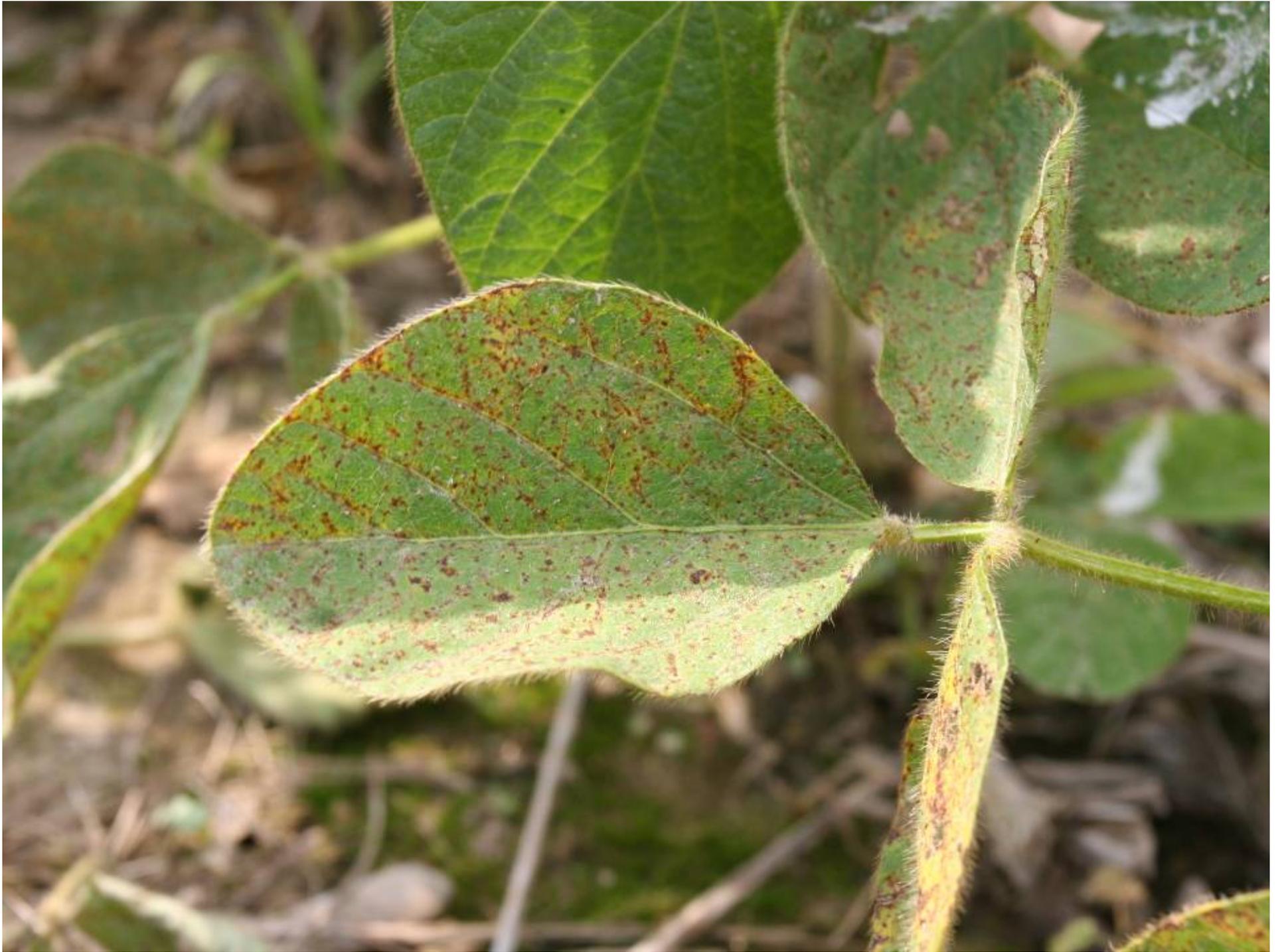


Experiments

- Experiment #1 – Soybean coverage (Dye)
 - Ground at 15 GPA: TeeJet 11006XR;
 - Aerial at 5 and 2 GPA; Conventional flat fan tips: TeeJet 1550
 - Aerial at 1 GPA; Electrostatic spray tips: TXVK 8
- Experiment #2 - Seed corn (inbred-line; sterile male)
 - Aerial at 5 GPA; Conventional flat fan tips: TeeJet 1550
 - Aerial at 1 GPA; Electrostatic spray tips: TXVK 8
 - Quadris
- Experiment #3 – Field corn and soybean yield response
 - Aerial 5, 2 GPA; Conventional flat fan tips: TeeJet 1550
 - Aerial at 1 GPA; Electrostatic spray tips: TXVK 8
 - untreated
 - Headline, Quilt, or Stratego
- Air Tractor 402; 140 mph;









Corn leaf blights

- Northern corn leaf blight and gray leaf spot are most common



NCLB



GLS

Premature death of leaves



Symptoms first appear on lower leaves; move up

Lesions coalesce

A large percentage of leaf area no longer carries out photosynthesis





W:\Conley\Shane\112_128...

101

31

Color Plane
 I S H Apply

Lesion HSI

Smooth (Median)

Toggle	
Outline	Smooth
Erode	Dilate
Open	Close blob

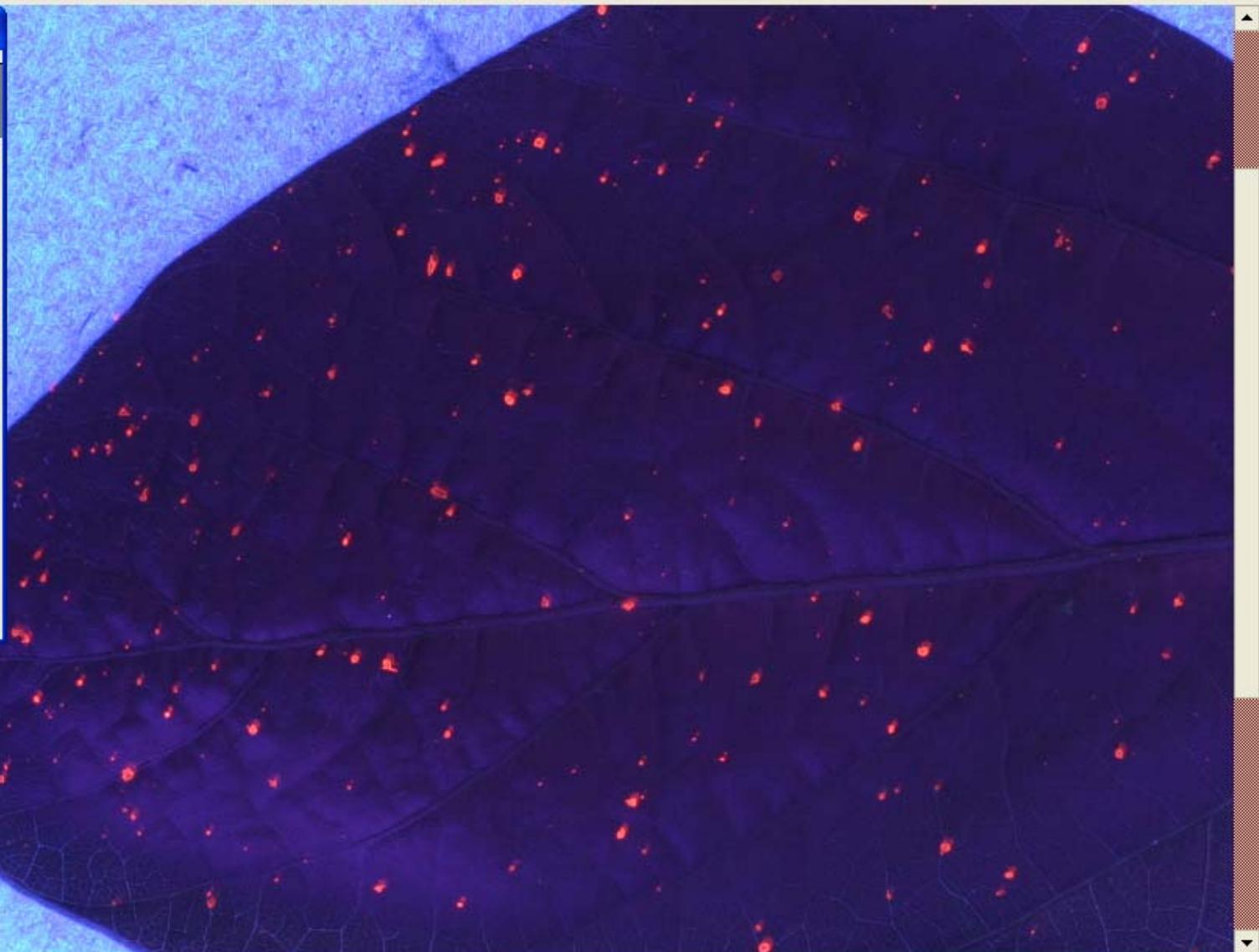
Options

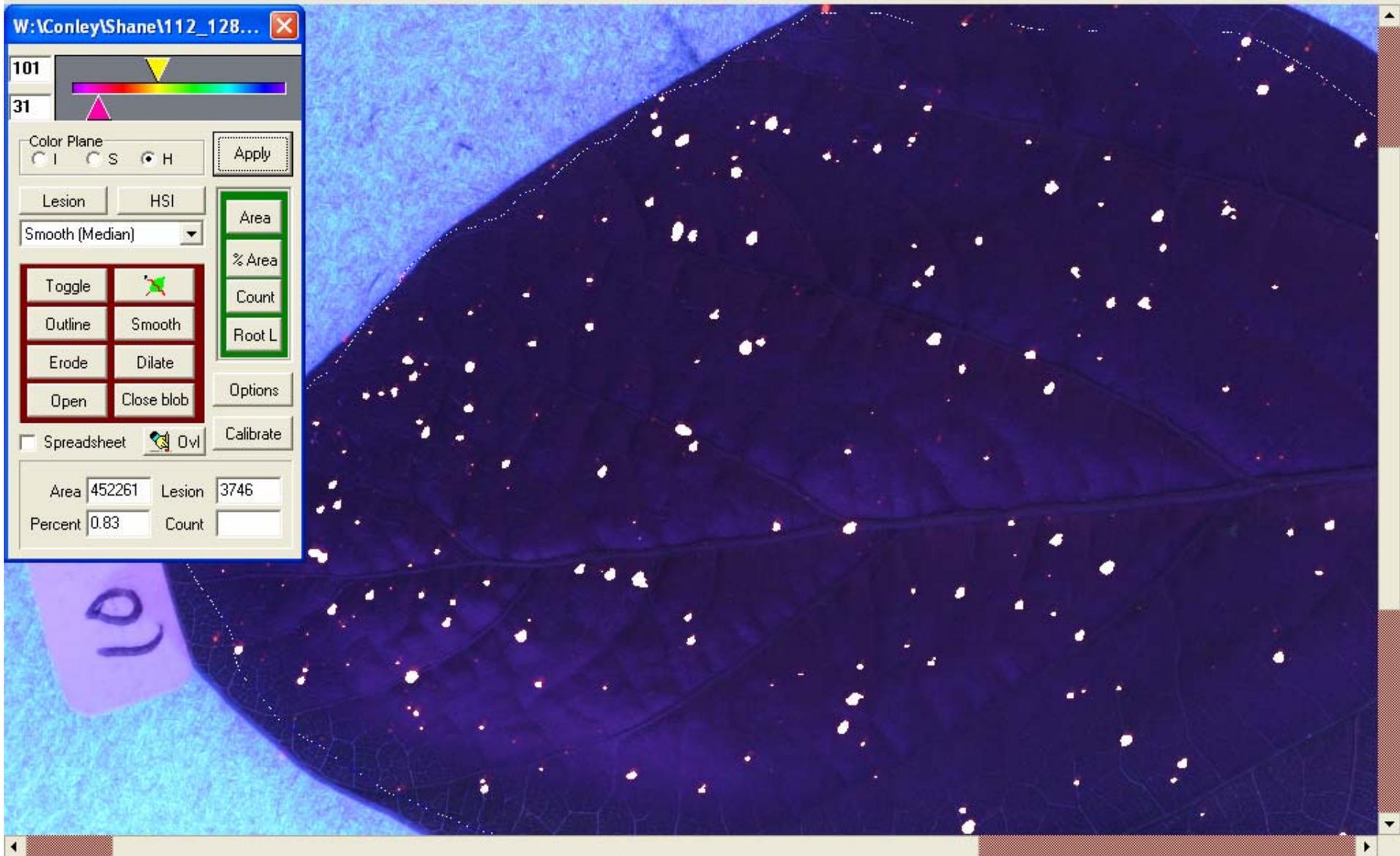
Spreadsheet Dvl Calibrate

Area Lesion

Percent Count

Area
% Area
Count
Root L





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101

31

Color Plane
 I S H

Apply

Lesion HSI

Smooth (Median)

Toggle	
Outline	Smooth
Erode	Dilate
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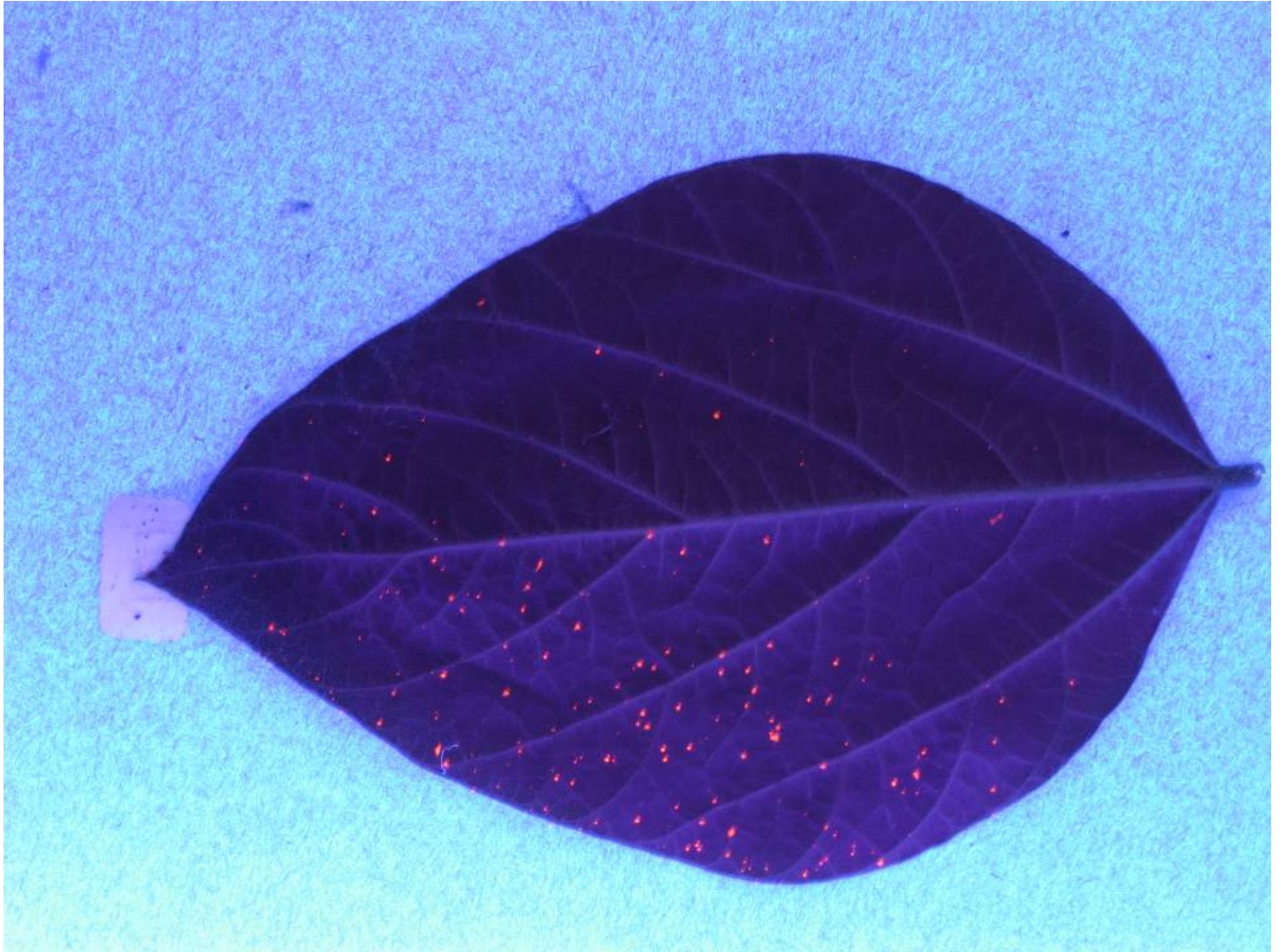
Area
% Area
Count
Root L

Options

Calibrate

Spreadsheet Dvl

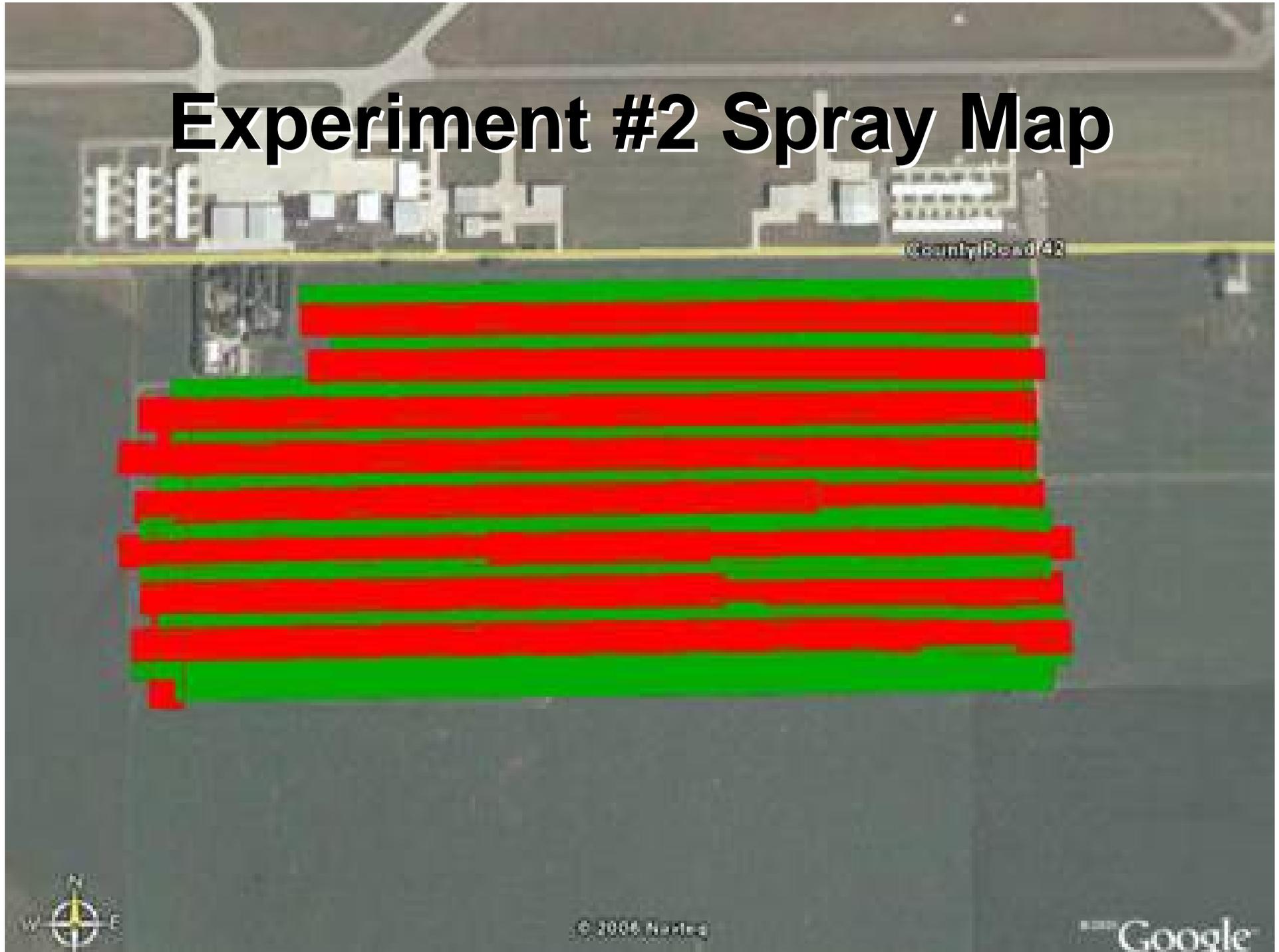
Area	452261	Lesion	3746
Percent	0.83	Count	



Results Experiment #1: Soybean Canopy Coverage

Canopy position	Leaf surface	Volume (GPA)			
		15	5	2	1
		-----Percent coverage -----			
Top	T	26.5	6.2	1.6	0.2
	B	0.7	3.4	0.7	0.1
Middle	T	7.8	3.9	0.8	0.5
	B	0.2	2.3	0.6	0.4
Bottom	T	7.4	2.0	1.0	0.3
	B	1.1	0.6	0.3	0.1

Experiment #2 Spray Map



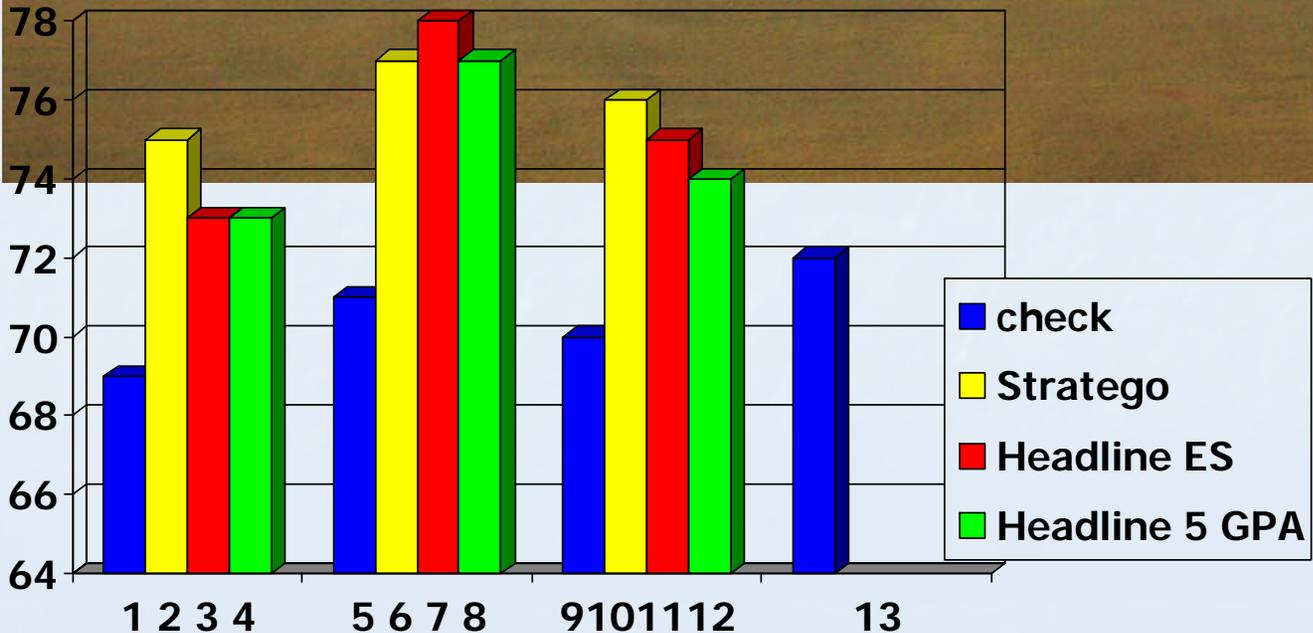
Results Experiment #2 Fungicide Efficacy

- Disease was a combination of gray leaf spot and northern corn leaf blight. Severity was assessed in five 1.25-in.-diameter quadrants per ear leaf on 10 plants per plot.
- Fertile, de-tasseled (21 DAT)
 - Conventional – 3.9%
 - Electrostatic – 4.5%
- Male sterile (21 DAT)
 - Conventional – 3.8%
 - Electrostatic – 4.4%



Leesburg, In 9.11.06 Soybean Fungicide Applications

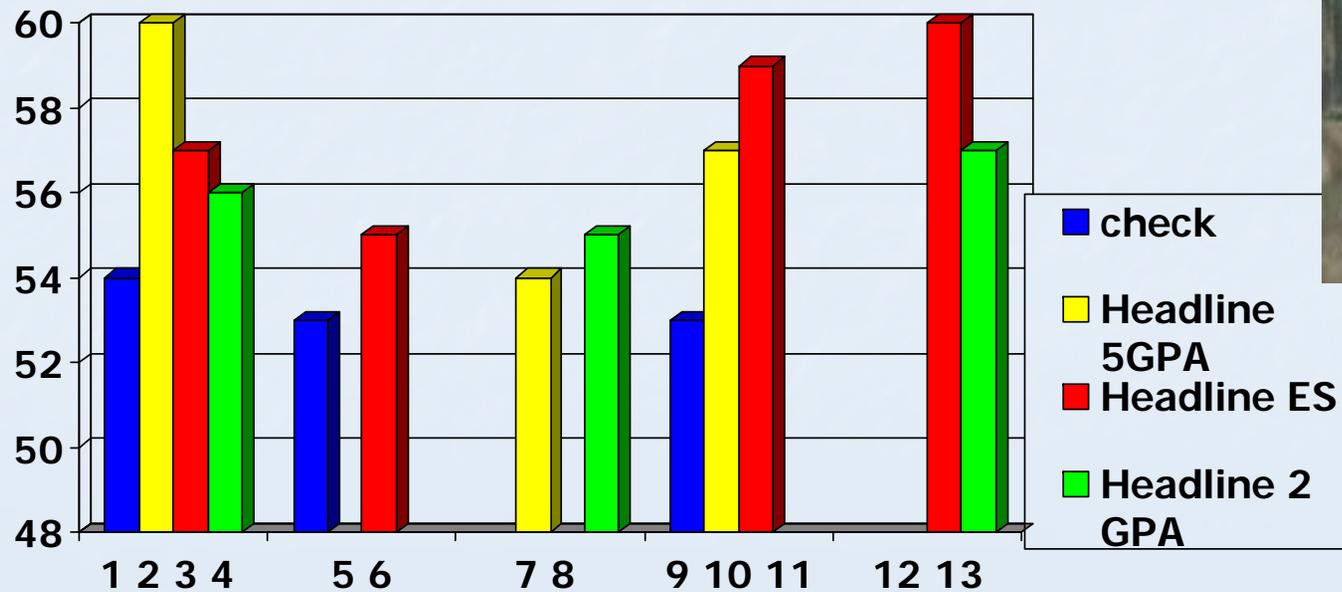
Application Date: 7.23.06
 Distance between swaths: 150 ft.
 Application swath width: 65 Ft
 Wind :West 10 MPH
 Headline: 6 oz.
 Stratego: 10 oz.



Results Experiment #3: Soybean Yield

Treatment	Yield
Check	70.5 b
Stratego	76.0 a
Headline ES	75.3 a
Headline 5 GPA	74.7 a
p-value:	0.0093

Wakarusa, In 9.26.06 Soybean Fungicide Applications

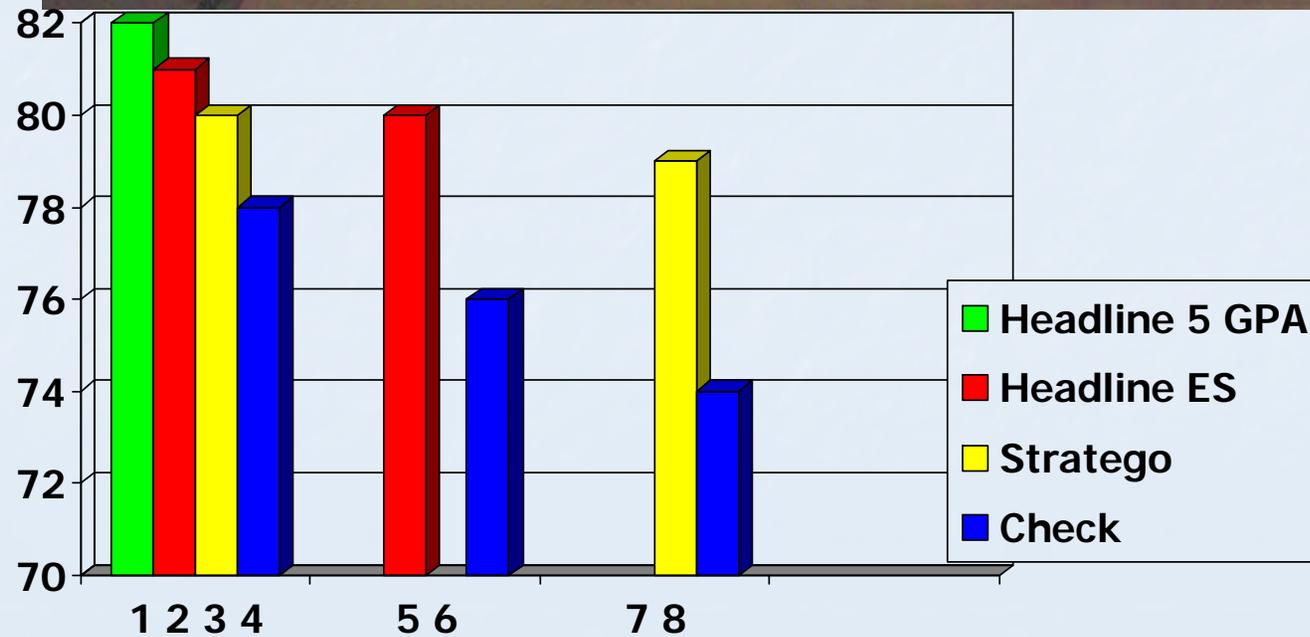


Results Experiment #3: Soybean Yield

Treatment	Yield
Check	53.3 a
Headline ES	57.3 a
Headline 5 GPA	57.0 a
Headline 2 GPA	56.0 a
p-value:	0.083

Leesburg, In 9.11.06 Soybean Fungicide Applications

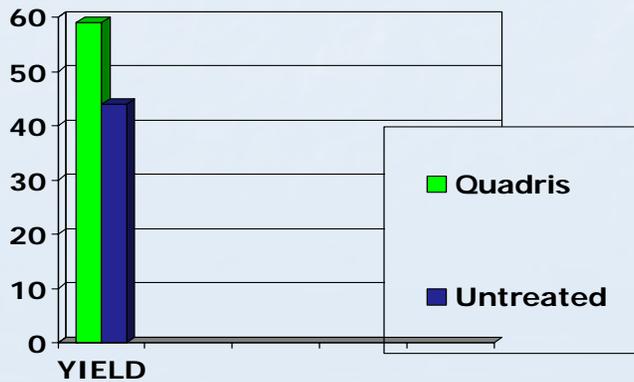
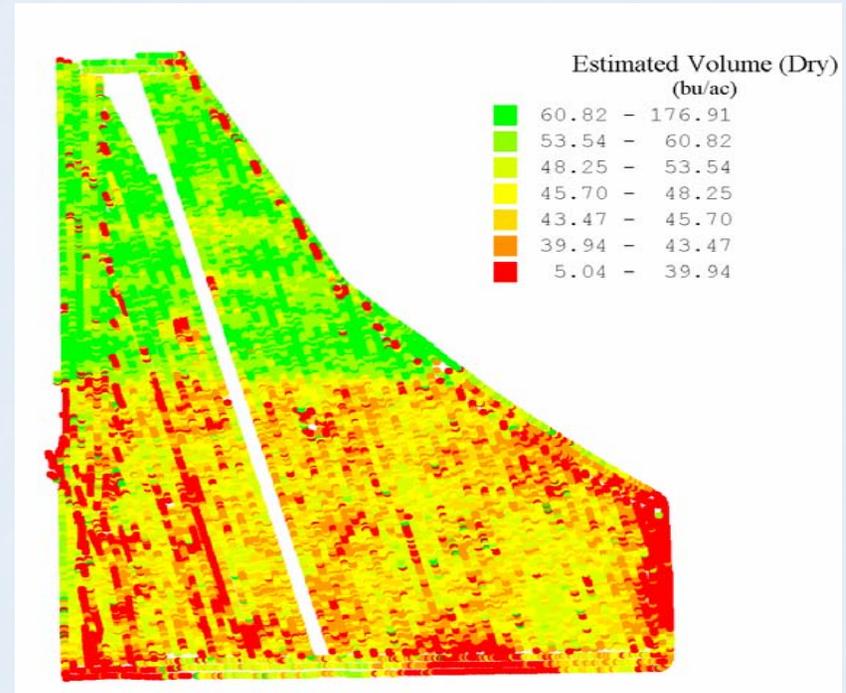
Application Date: 7.23.06
 Distance between swaths: 150 ft.
 Application swath width: 65 Ft
 Wind :West 10 MPH
 Headline: 6 oz.
 Stratego: 10 oz.



Results Experiment #3: Soybean Yield

Treatment	Yield
Check	76.0 b
Stratego	78.5 a
Headline ES	79.5 a
p-value:	0.025

Mentone, In 9.26.06 Soybean Fungicide Applications

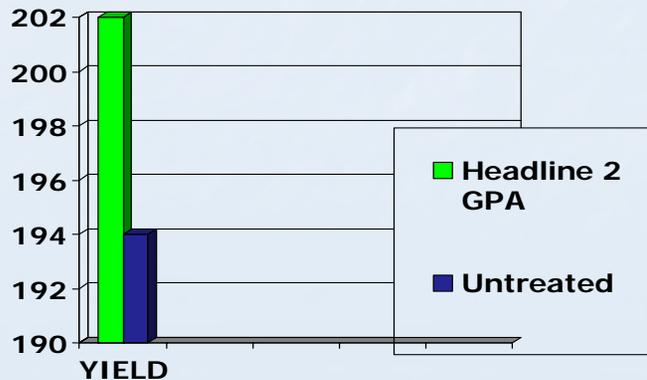
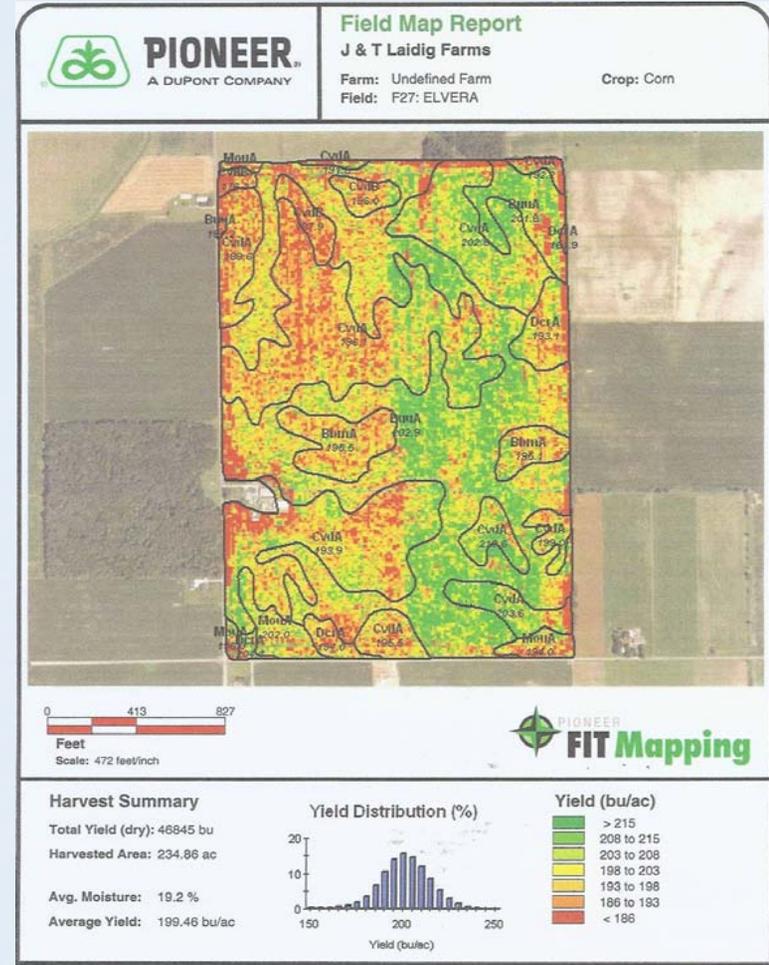


Application Date: 8.2.06
 Wind : South 8 mph
 Quadris: 6 ozs.
 CoRoN: 1 qt/acre
 Warrior: 2.5 ozs.



South Bend, In 9.26.06

Corn Fungicide Applications

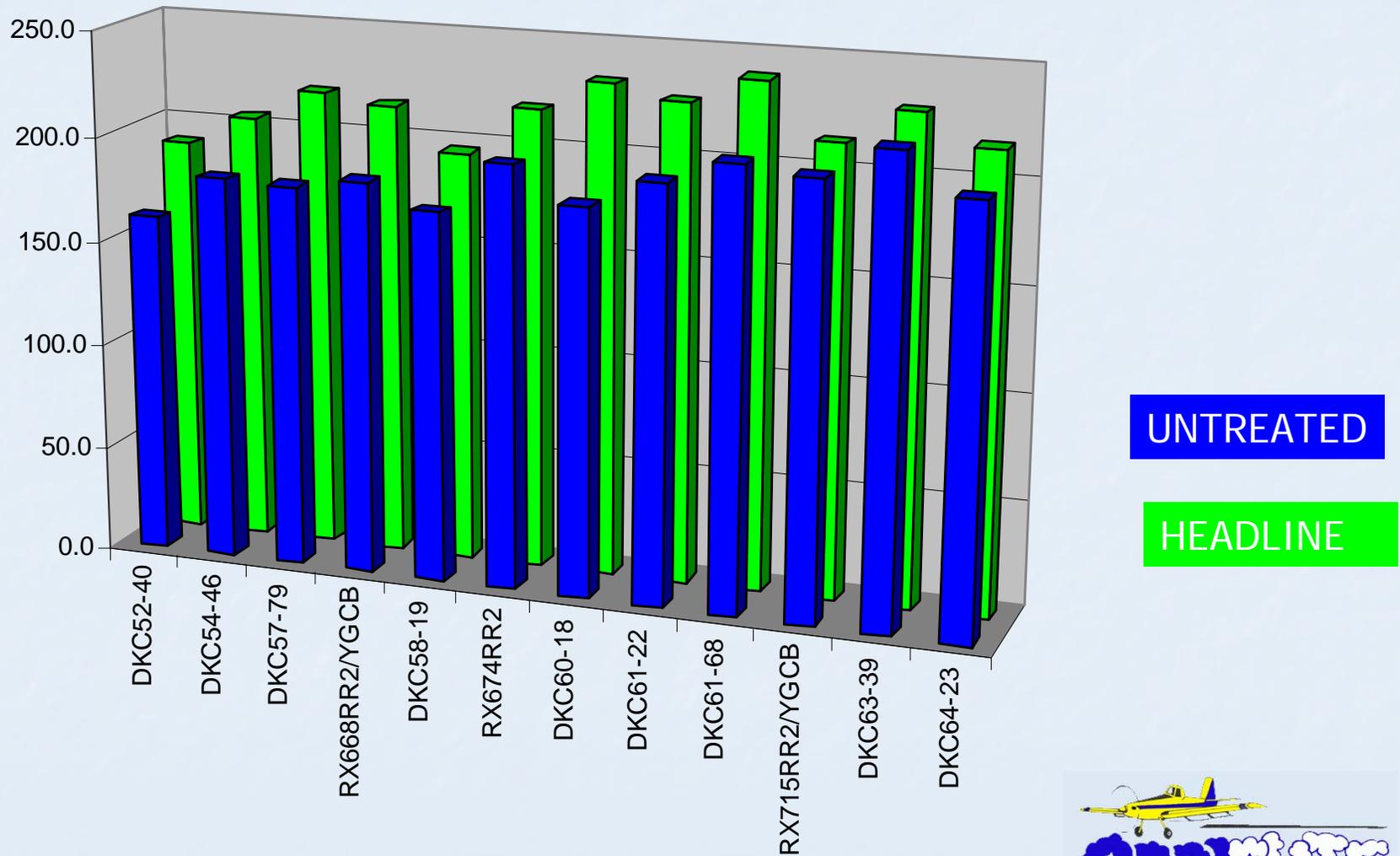


Application Date: 7.10.06
Wind :CALM
Headline: 6 oz.



2006 IL MONSANTO FUNGICIDE APPLICATIONS RESULTS

JEFF BARTH, FLANAGAN, IL



UNTREATED

HEADLINE



Results Experiment #3 Yield Response

- **Yield response was similar among spray systems**
- **Significance vs. trends**
 - **Where do we put our \$\$**
- **Importance of statistical design**
- **Variable cultivar or hybrid response**

Preliminary Conclusions

- Experiment #1 – Soybean coverage (Dye)
 - Spray canopy coverage was similar between the conventional applications at 5 and 2 GPA and the electrostatic system at 1 GPA
- Experiment #2 - Seed corn efficacy trial
 - Fungicide efficacy was similar between the conventional application at 5 and the electrostatic system at 1 GPA at 7 and 21 DAT
- Experiment #3 – Field corn and soybean yield
 - Yield response was similar among spray systems



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- Purdue Extension
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- Agronomy Extension
- Chat 'n Chew Café
- Soybean Expert List
- Diagnostic Training Center
- Indiana Soybean



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[Profitability of Cutting Seeding Rates: Fact or Fiction](#)



[2005 Report on the Impact of Fungicide Application Timing and Soybean Row Spacing on Spray Canopy Penetration and Grain Yield](#)

[Soybean Management PowerPoint Presentation](#)

[Electrostatic Spray Technology PowerPoint](#)