Soybean Disease Update, New Research, and Emerging Issues

LSU AgCenter
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Foliar Disease Management - Soybean

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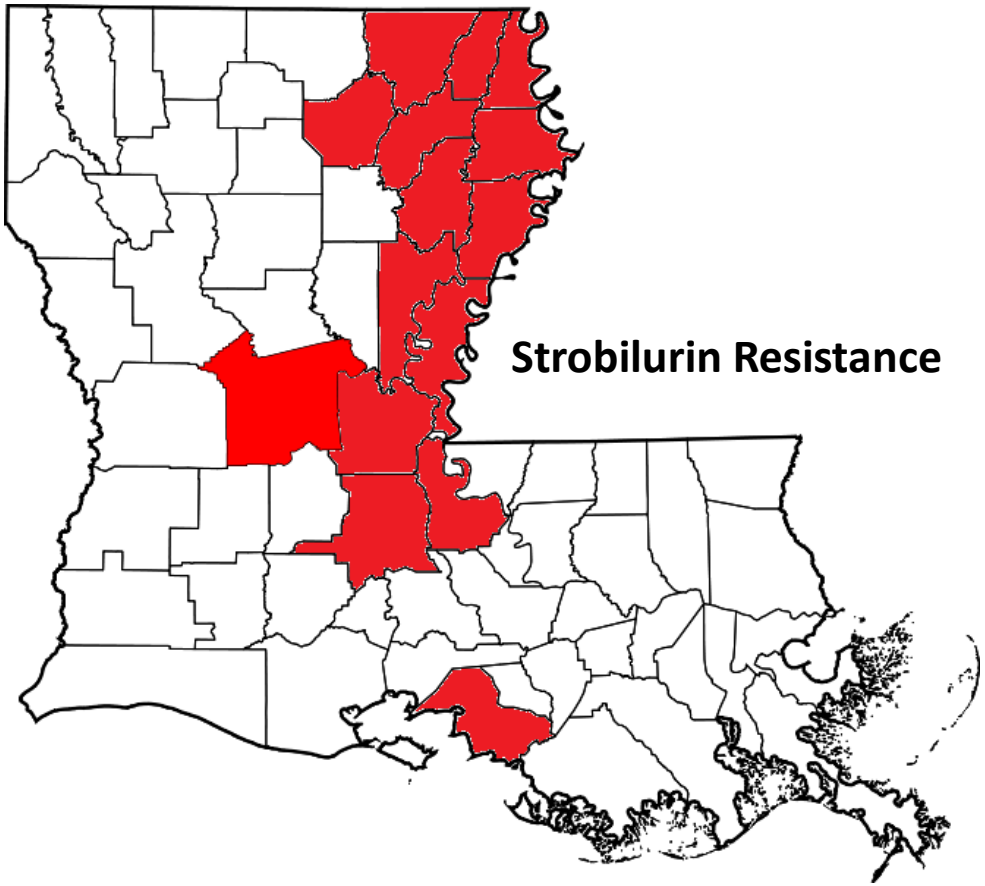
Foliar Diseases – Frogeye leaf spot

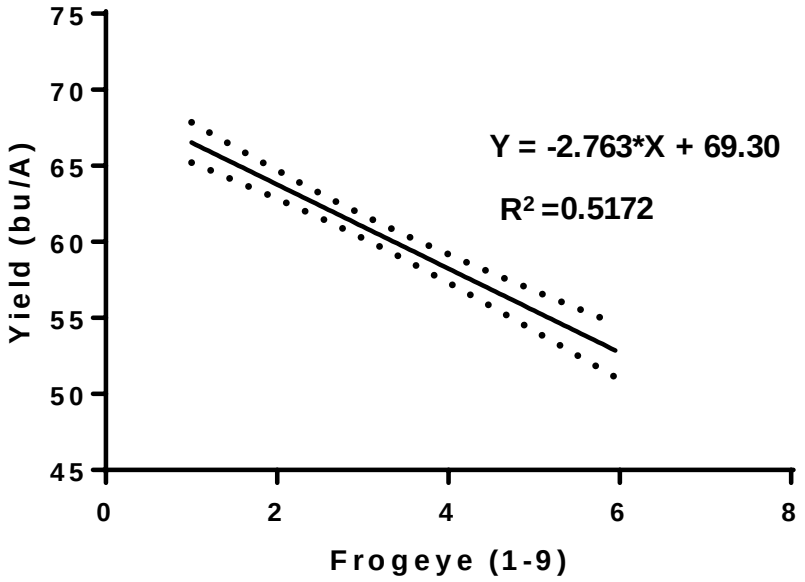
$96 million in losses in 2014
in the Mid-South (AR,LA,MO,MS,TN,TX)



Resistant Vs. Susceptible Varieties

Variety	Frogeye (1-9)	Yield (bu/A)	Rank
C4544R2	1	65.6	19
5N451R2	1	65.4	21
REV 49R94	1	67.8	8
REV 48R44	1	68.7	3
REV 47R34	1	67.2	13
REV 47R53	1	67.7	9
HALO 4:94 LL	1	69.1	2
S47-K5	1	70.5	1
P 4928 LL	1	63.9	40
AG 4632	1	64.4	36

← Top 10 Frogeye Resistant Varieties



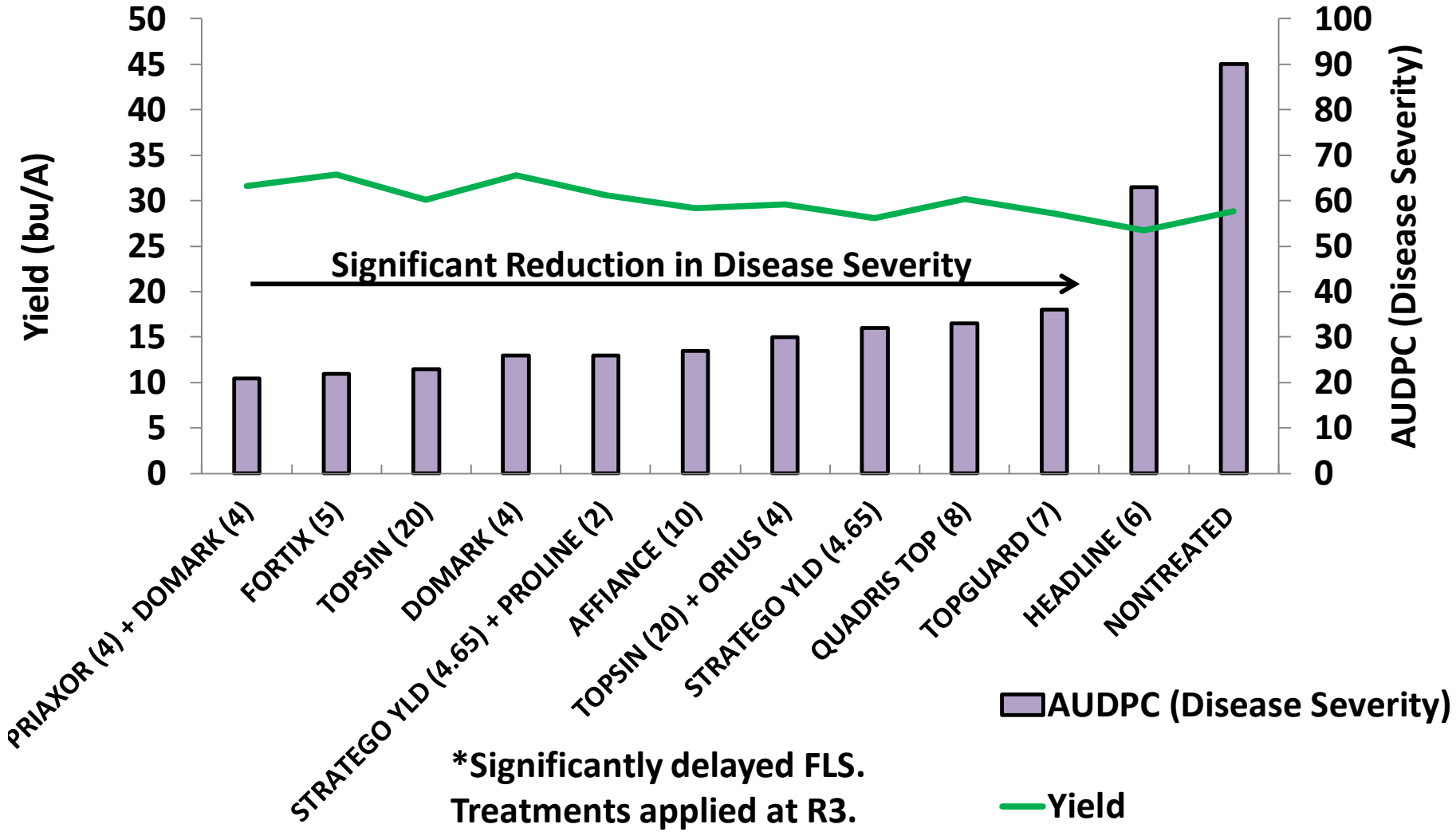
Variety	Frogeye (1-9)	Yield (bu/A)	Rank
AX4470	5	53.8	89
46X04	5	56.5	78
AG 4934	5	54.7	85
AX4490	5.3	49.2	97
AG 4531	5.3	57.5	73
S09-6262	5.3	45.2	100
P4510RYS	5.7	54.5	87
DG 4930 RR2	5.7	49.7	98
R08-2797	5.7	46.5	99
48X34	6	50	96

P4510RYS = Delta King 4744 = Armor 48R40 = Croplan R2T4799S = DynaGro 37RY47 AND OTHERS

← Bottom 10 Frogeye Susceptible Varieties

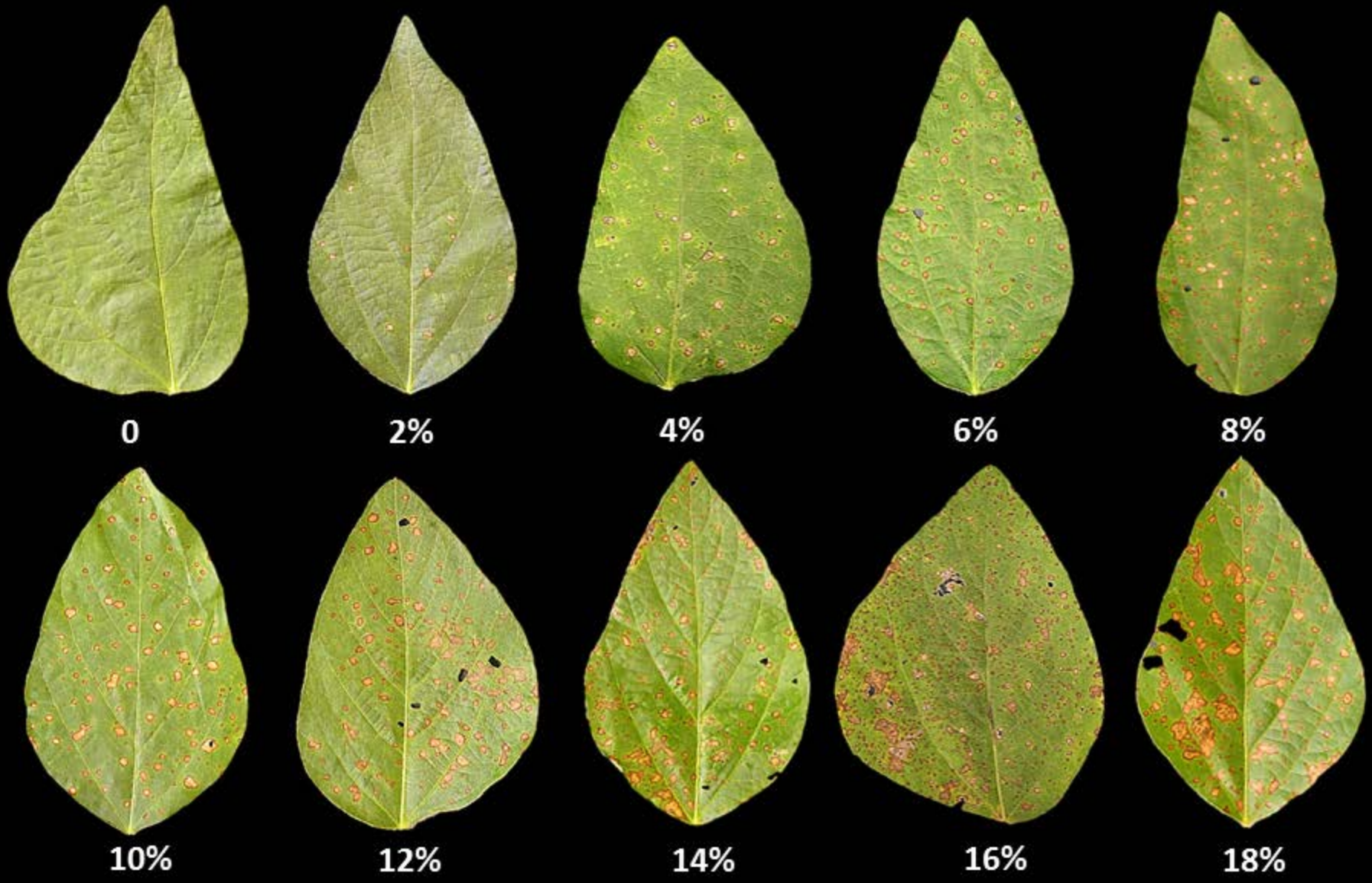
Estimated losses up to 18% in this trial.

Comparison of Popular Fungicide Options on Frogeye Leaf Spot – 2015

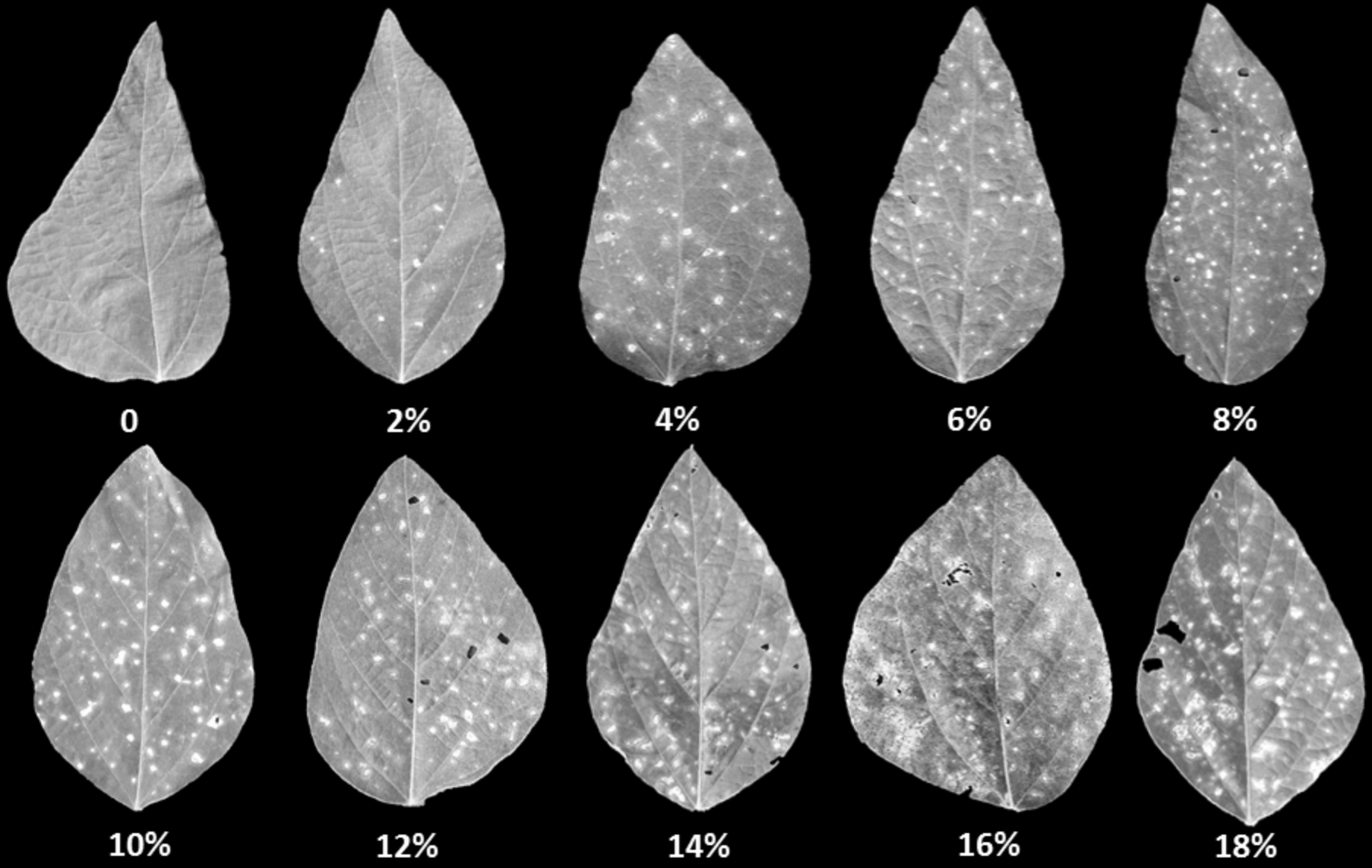


*Significantly delayed FLS.
Treatments applied at R3.
Maximum Disease Severity = 8%
No significant yield effects.

Armor DK 4744
MRSB1509

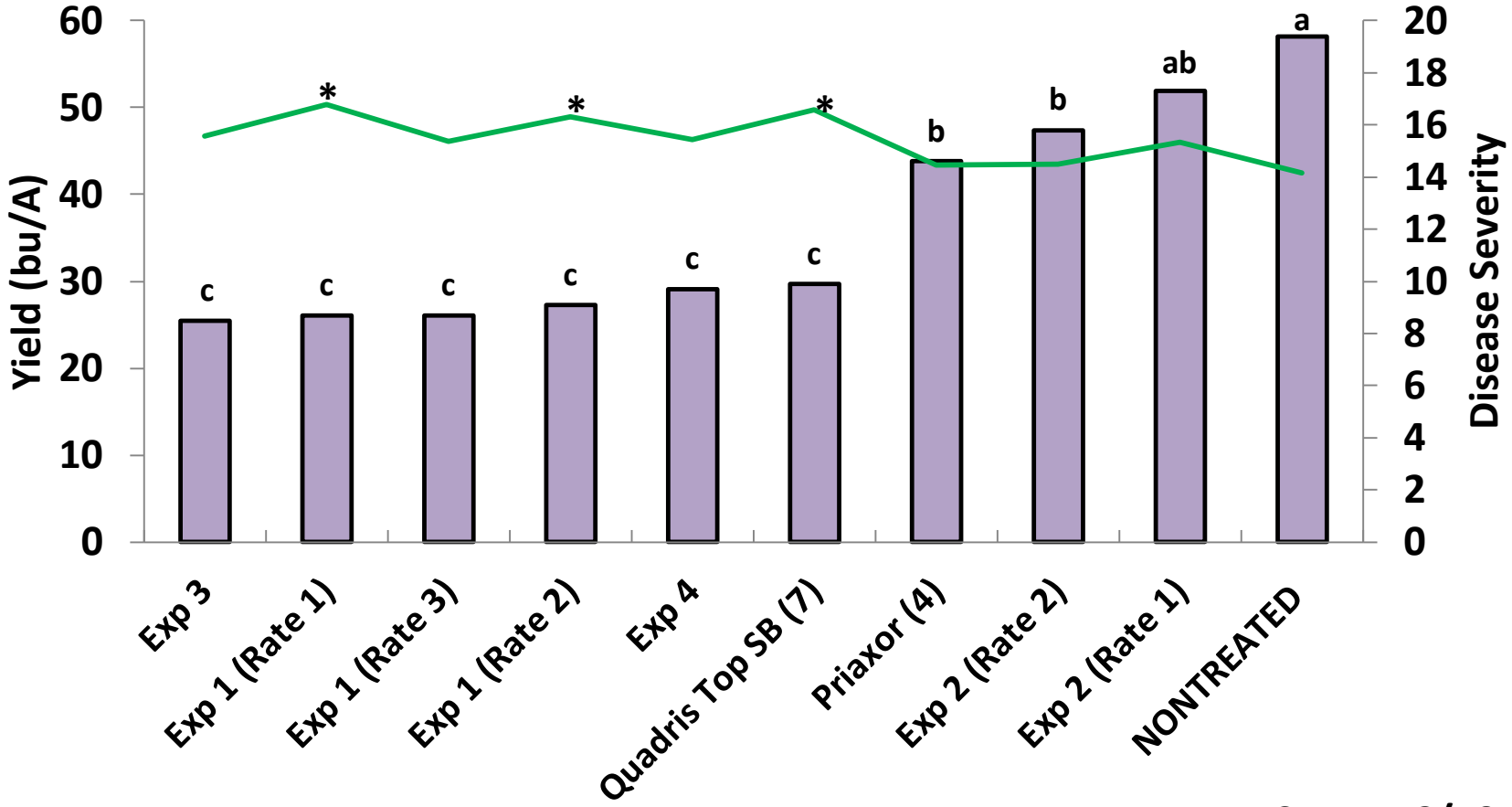


Price et al 2015



Price et al 2015

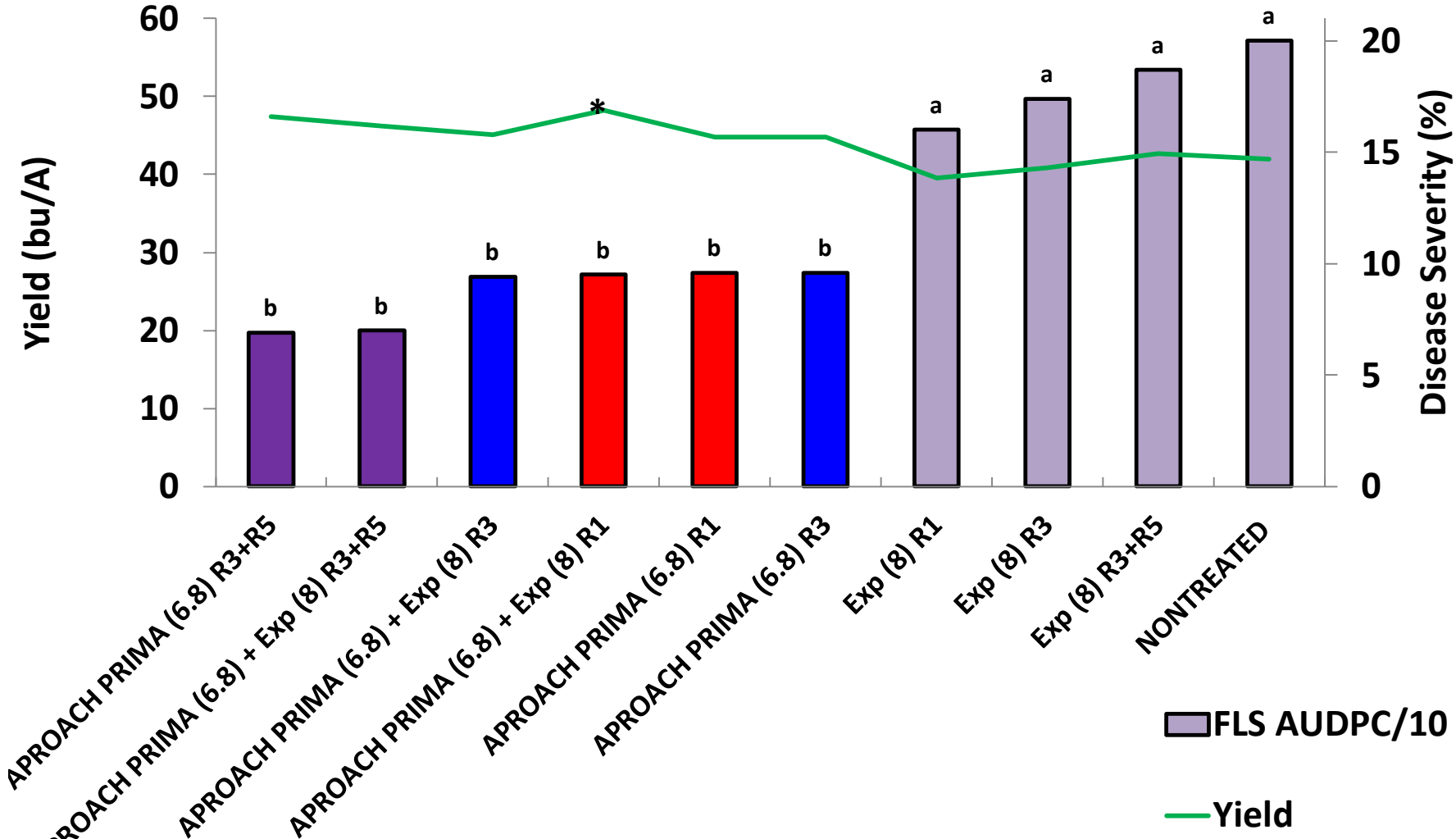
Rate Comparison of Experimental Compounds on FLS – Isagro – 2015



All treatments applied at R3.
Maximum FLS Severity = 10%
Most treatments resulted in significantly less FLS and CLB.
***Significant yield preservation compared to the non-treated control.**

Syngenta NK 52-Y2
DLSB1506

Efficacy of Aproach Prima and an Experimental Compound on FLS – DuPont – 2015



Maximum FLS Severity = 11%

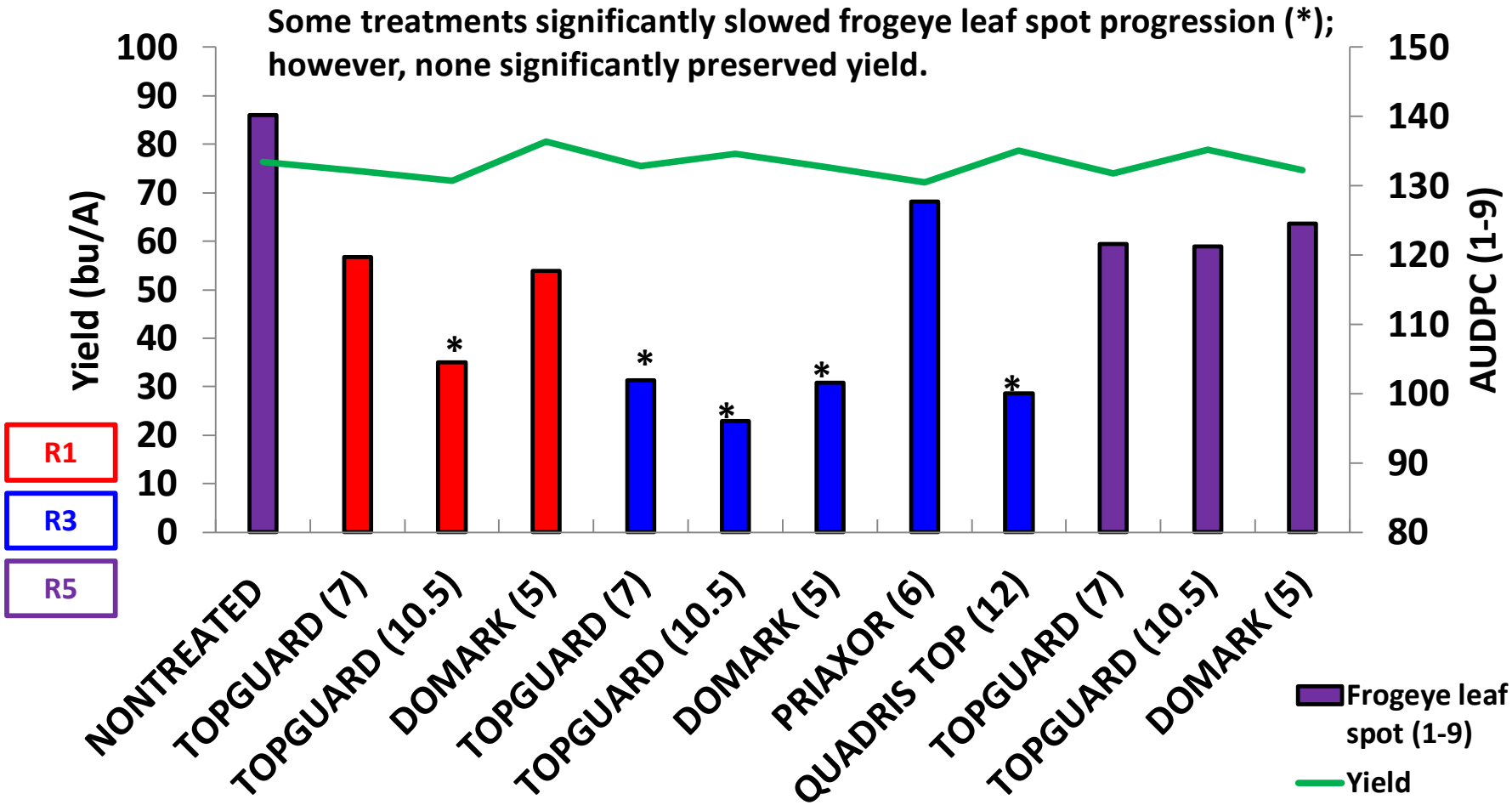
Most treatments containing Aproach Prima resulted in less FLS and CLB.

***Significant yield preservation compared to the non-treated control.**

Syngenta NK 52-Y2

DLSB1507

Effect of Fungicide Timing on FLS – NERS



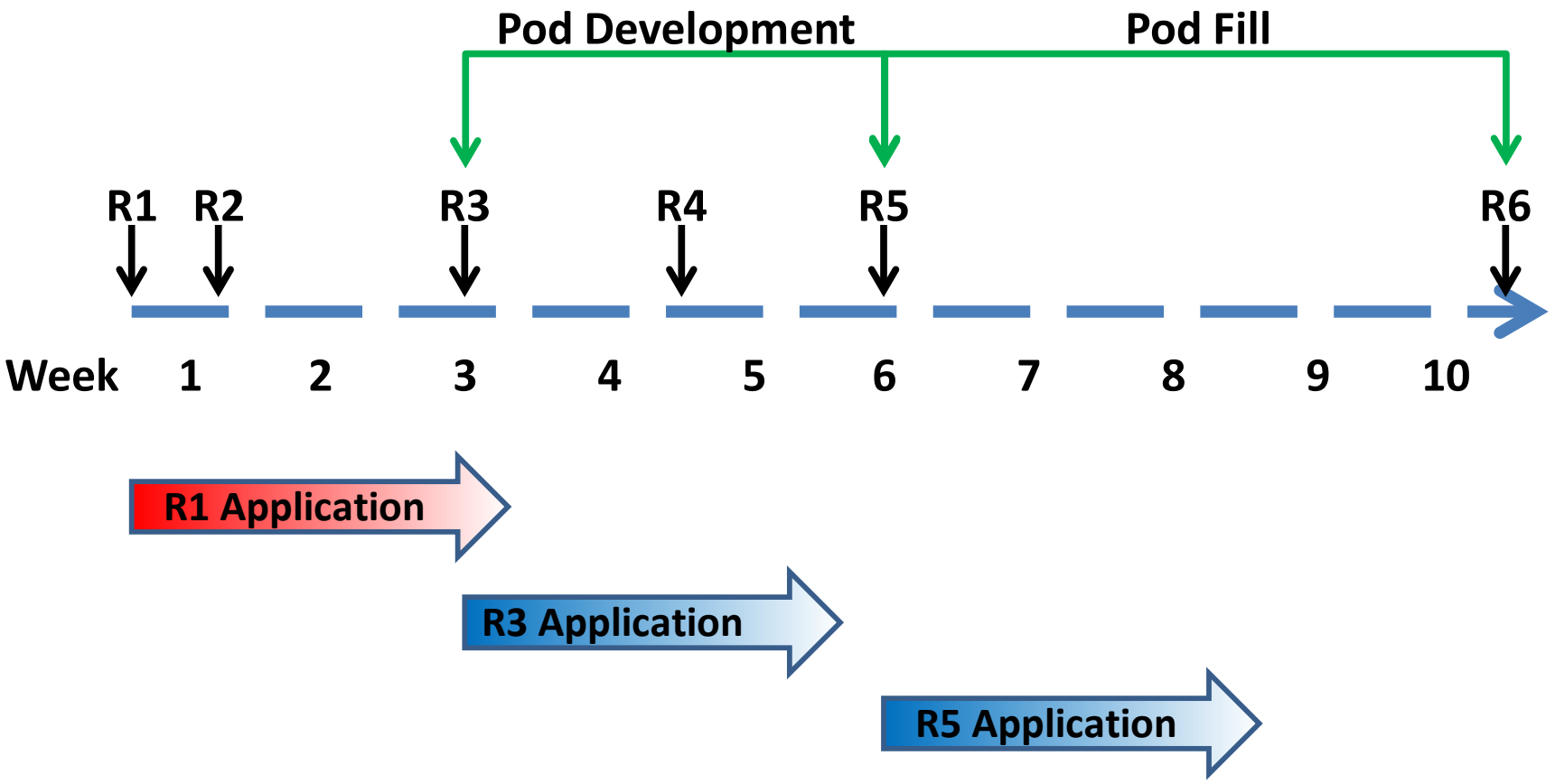
Various application timings. Product rates in parentheses (fl oz/A).

AUDPC = Average of three disease ratings.

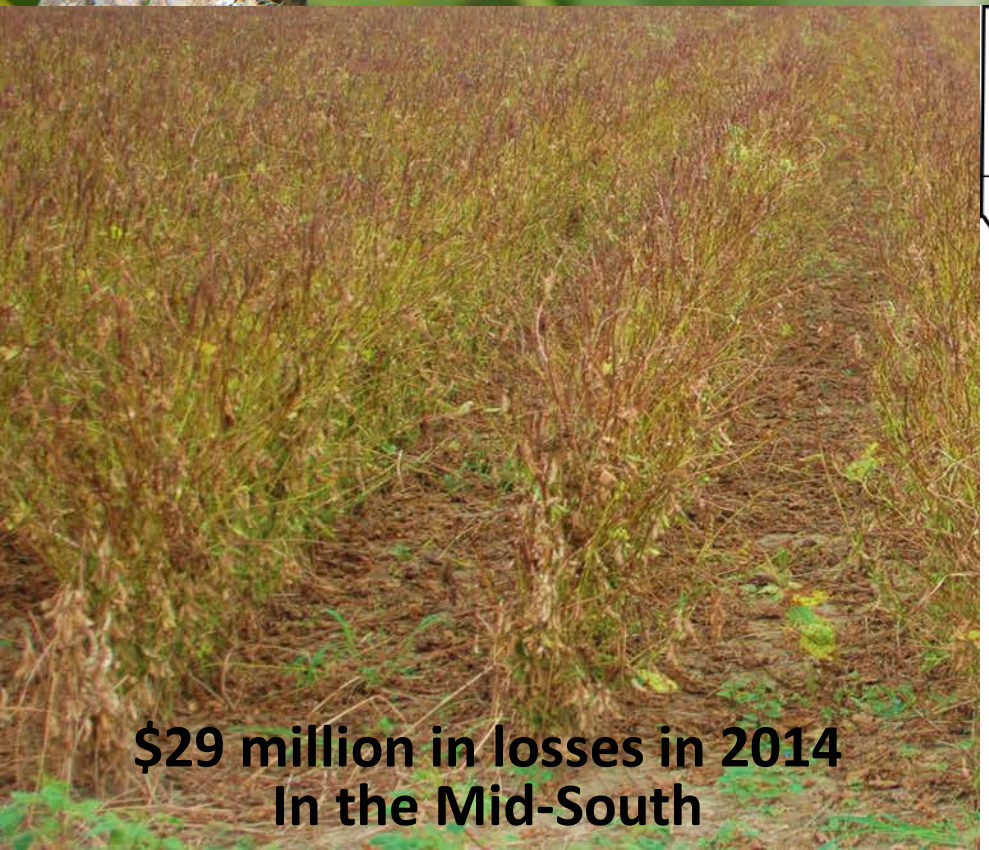
Variety: PI 95Y01

NESB1401

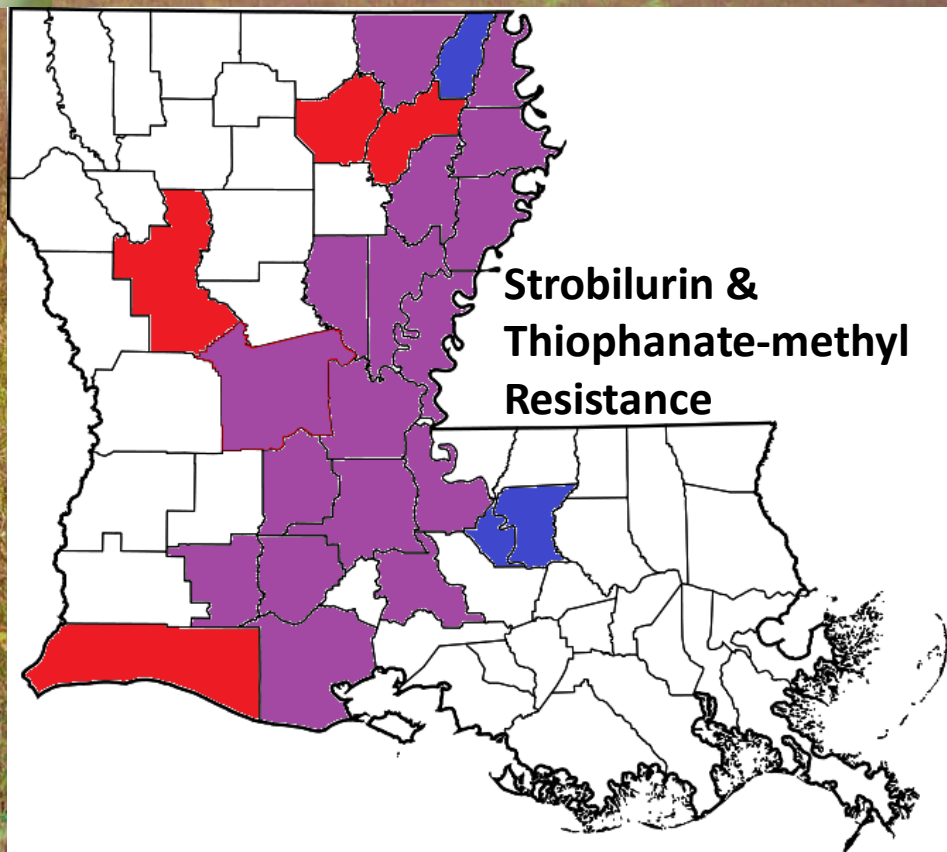
Timing Considerations



Foliar Diseases – Cercospora leaf blight



$29 million in losses in 2014 In the Mid-South



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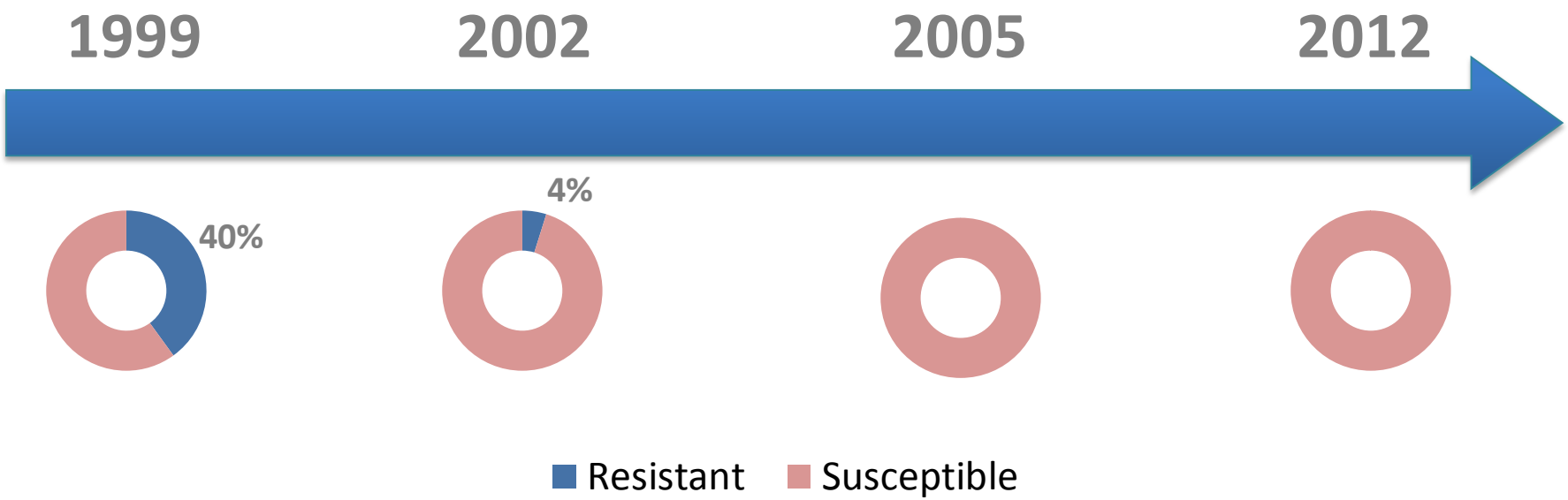
Soybean Varieties Resistant to CLB

Louisiana



Moore, 2000

Schneider, 2003

Unpublished Data

Levy, 2013

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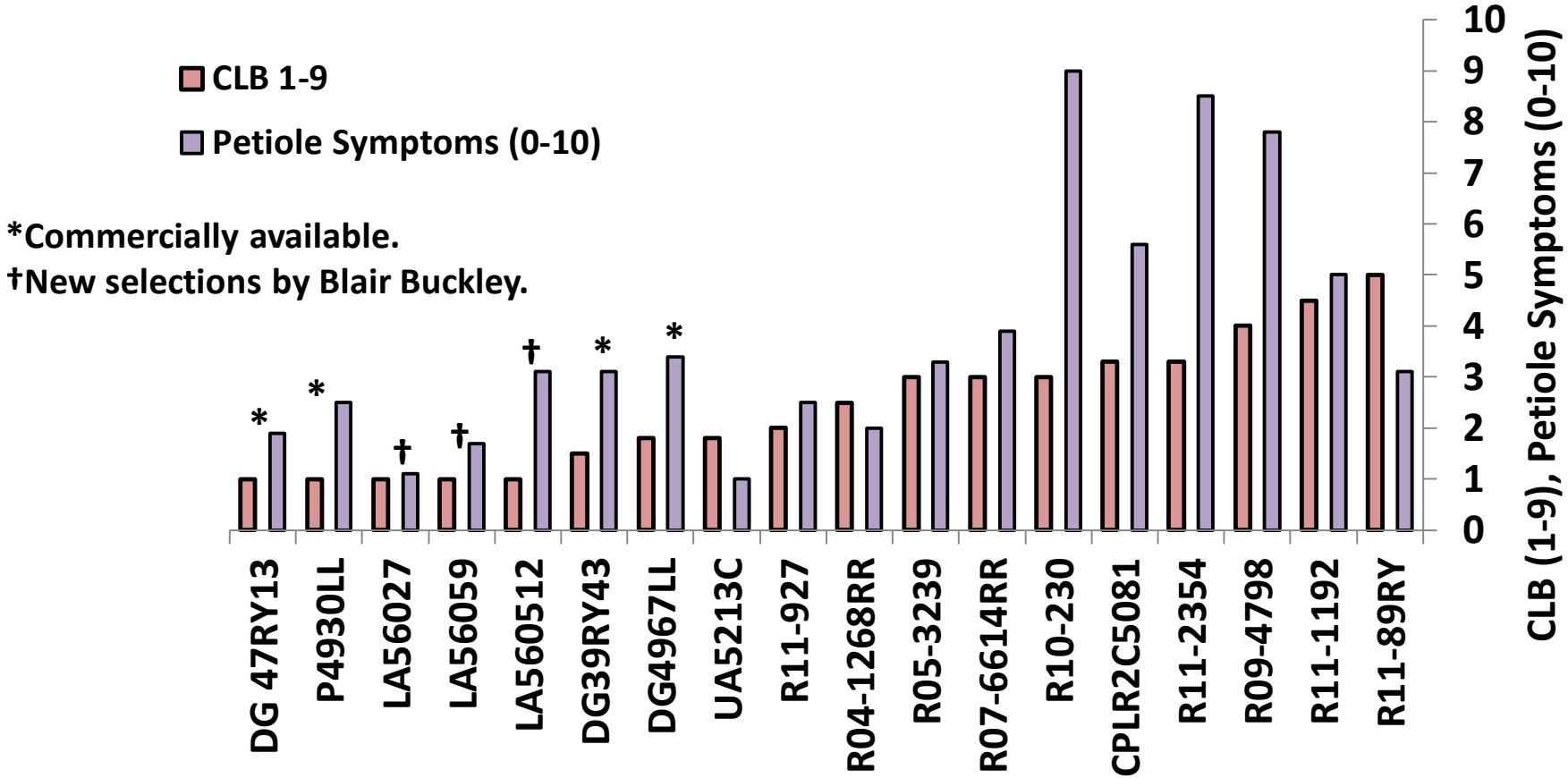
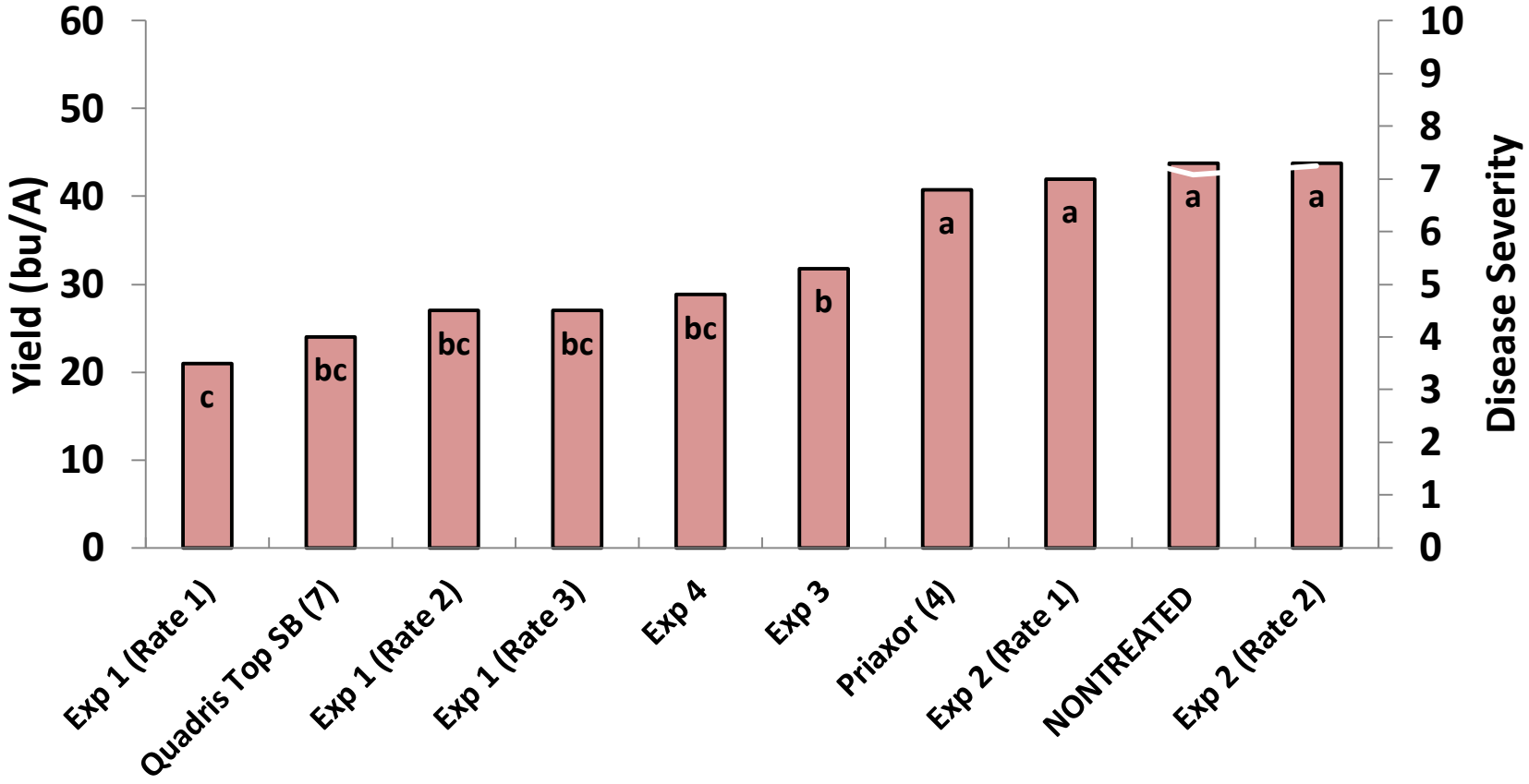
Varietal Susceptibility to Cercospora Leaf Blight – USB Uniform Variety Trial – 2015



Data ranked by Cercospora Leaf Blight severity (least to most).
Petiole symptoms were rated separately and somewhat correlated with foliar ratings (R^2=0.58).
Yield was not obtainable because of inclement weather.

DLSB1501

Rate Comparison of Experimental Compounds on CLB – Isagro – 2015

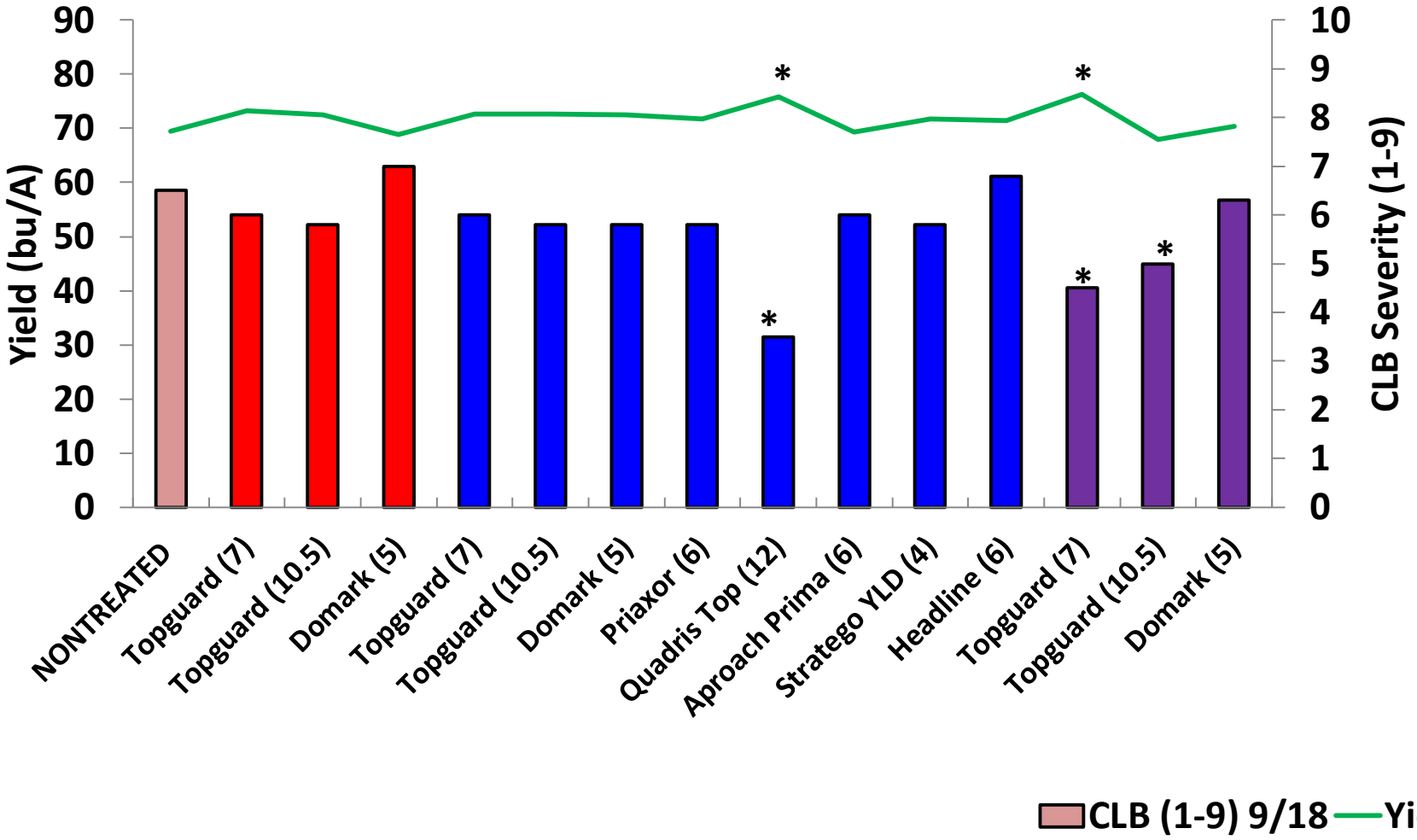


CLB (1-9) 9/17 Yield

All treatments applied at R3.
Maximum FLS Severity = 10%
Some treatments resulted in significantly less CLB.
***Significant yield preservation compared to the non-treated control.**

Syngenta NK 52-Y2
DLSB1506

USB/LA Uniform Fungicide Trial – 2015

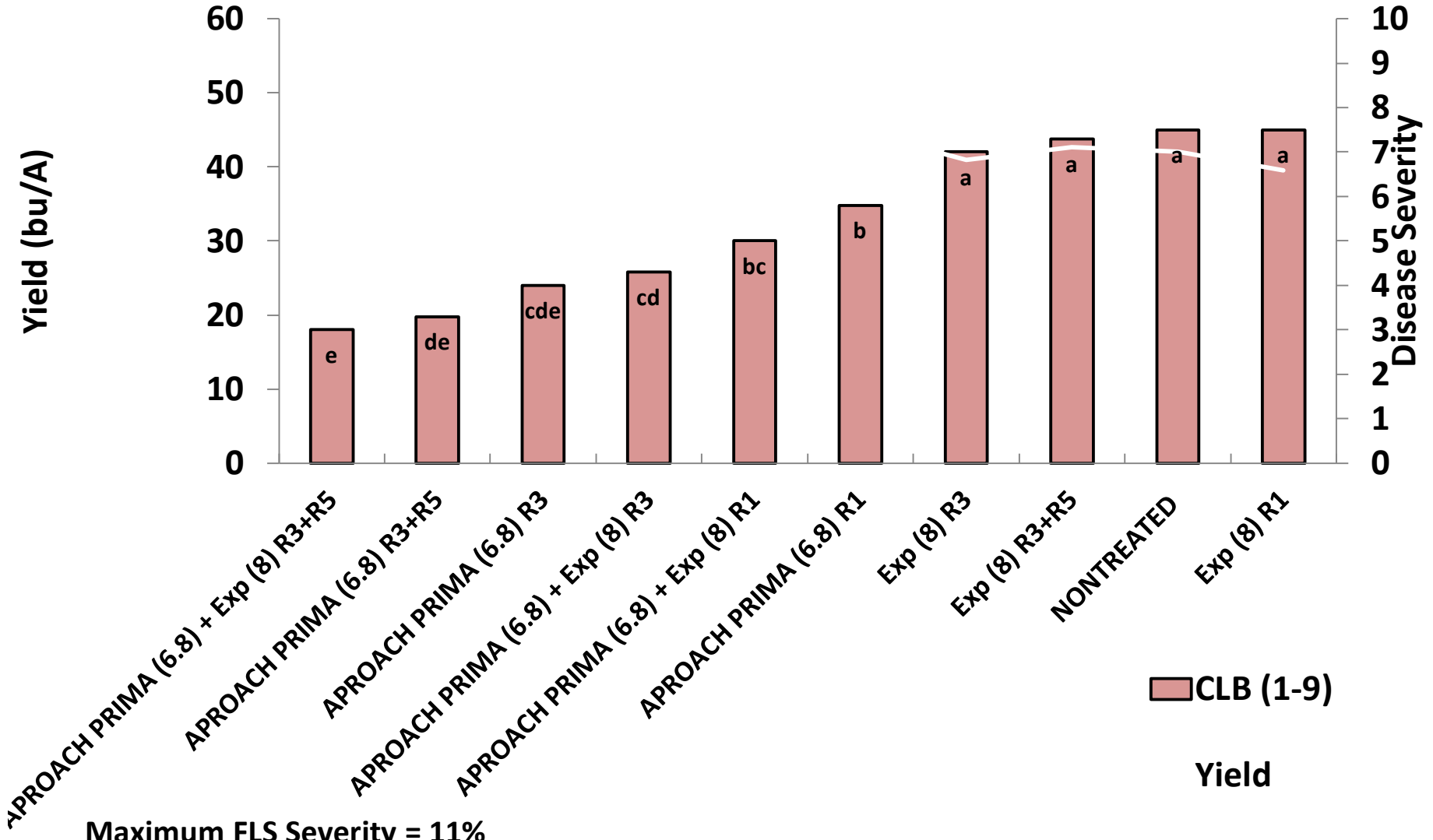


Some treatments resulted in significantly less CLB.

***Significant yield preservation or disease severity compared to the non-treated control.**

Croplan 5081
NESB1506

Efficacy of Aproach Prima and an Experimental Compound on CLB – DuPont – 2015



Maximum FLS Severity = 11%

Most treatments containing Aproach Prima resulted in less CLB.

***Significant yield preservation compared to the non-treated control.**

Syngenta NK 52-Y2

DLSB1507

Management of Soybean Diseases
Foliar Fungicide Efficacy for Control of Foliar Soybean Diseases—July 2015

The North Central Regional Committee on Soybean Diseases and the Regional Committee for Soybean Rust Pathology (NCERA-212 and NCERA-208), **which also includes members from the Mid-South**, have developed the following information on foliar fungicide efficacy for control of major foliar soybean diseases in the United States. **Ratings in this table have been modified by LSU AgCenter Pathologists to more accurately reflect observations in Louisiana.** Efficacy ratings for each fungicide listed in the table were determined by field-testing the materials over multiple years and locations by the members of the committee. Efficacy ratings are based upon level of disease control achieved by product, and are not necessarily reflective of yield increases obtained from product application. Efficacy depends upon proper application timing, rate, and application method to achieve optimum effectiveness of the fungicide as determined by labeled instructions and overall level of disease in the field at the time of application. Differences in efficacy among fungicide products were determined by direct comparisons among products in field tests and are based on a single application of the labeled rate as listed in the table, unless otherwise noted. **Table includes systemic fungicides available that have been tested over multiple years and locations. The table is not intended to be a list of all labeled products[1]**. Efficacy categories: NR=Not Recommended; P=Poor; F=Fair; G=Good; VG=Very Good; E=Excellent; NL = Not Labeled for use against this disease; U = Unknown efficacy or insufficient data to rank product efficacy.

Fungicide(s)				Aerial web blight[1]	Anthracnose	Brown spot	Cercospora leaf blight[2]	Frogeye leaf spot[3]	*Phomopsis*/ *Diaporthe* (Pod and stem blight)	Soybean rust	Harvest restriction[4]
Class	Active ingredient (%)	Product/Trade name	Rate/A (fl oz)								
QoI Strobilurins Group 11	Azoxystrobin 22.9%	Quadris 2.08 SC Generics[6]	6.0 - 15.5	VG	VG	G	P	F	U	G-VG	14 days
	Fluoxastrobin 40.3%	Aftershock 480 SC Evito 480 SC	2.0 – 5.7	VG	G	G	P	F	U	U	R5 (beginning seed) 30 days
	Picoxystrobin	Aproach 2.08 SC	6.0 -12.0	VG	G	G	P	F	U	G	14 days
	Pyraclostrobin 23.6%	Headline 2.09 EC/SC	6.0 - 12.0	VG	VG	G	P	F	U	VG	21 days
DMI Triazoles Group 3	Cyproconazole 8.9%	Alto 100SL	2.75 – 5.5	U	U	VG	U	F	U	VG	30 days
	Flutriafol 11.8%	Topguard 1.04 SC	7.0 – 14.0	U	VG	VG	P-G[5]	VG	U	VG-E	21 days
	Propiconazole 41.8%	Tilt 3.6 EC Multiple Generics[6]	2.0 - 4.0	P	VG	G	P	F	NL	VG	R5 (beginning seed)
	Prothioconazole 41.0%	Proline 480 SC	2.5 – 4.3	NL	NL	NL	NL	VG	NL	VG	21 days
	Tetraconazole 20.5%	Domark 230 ME	4.0 – 5.0	NL	VG	VG	P-G[5]	VG	U	VG-E	R5 (beginning seed)
MBC Thiophanates Group 1	Thiophanate-methyl	Topsin-M Multiple Generics[6]	10.0 – 20.0	U	U	U	P	G	U	NL	21 days

Disease Severity

Field Experiment

LSU-AgCenter
Dean Lee Research Station 2013

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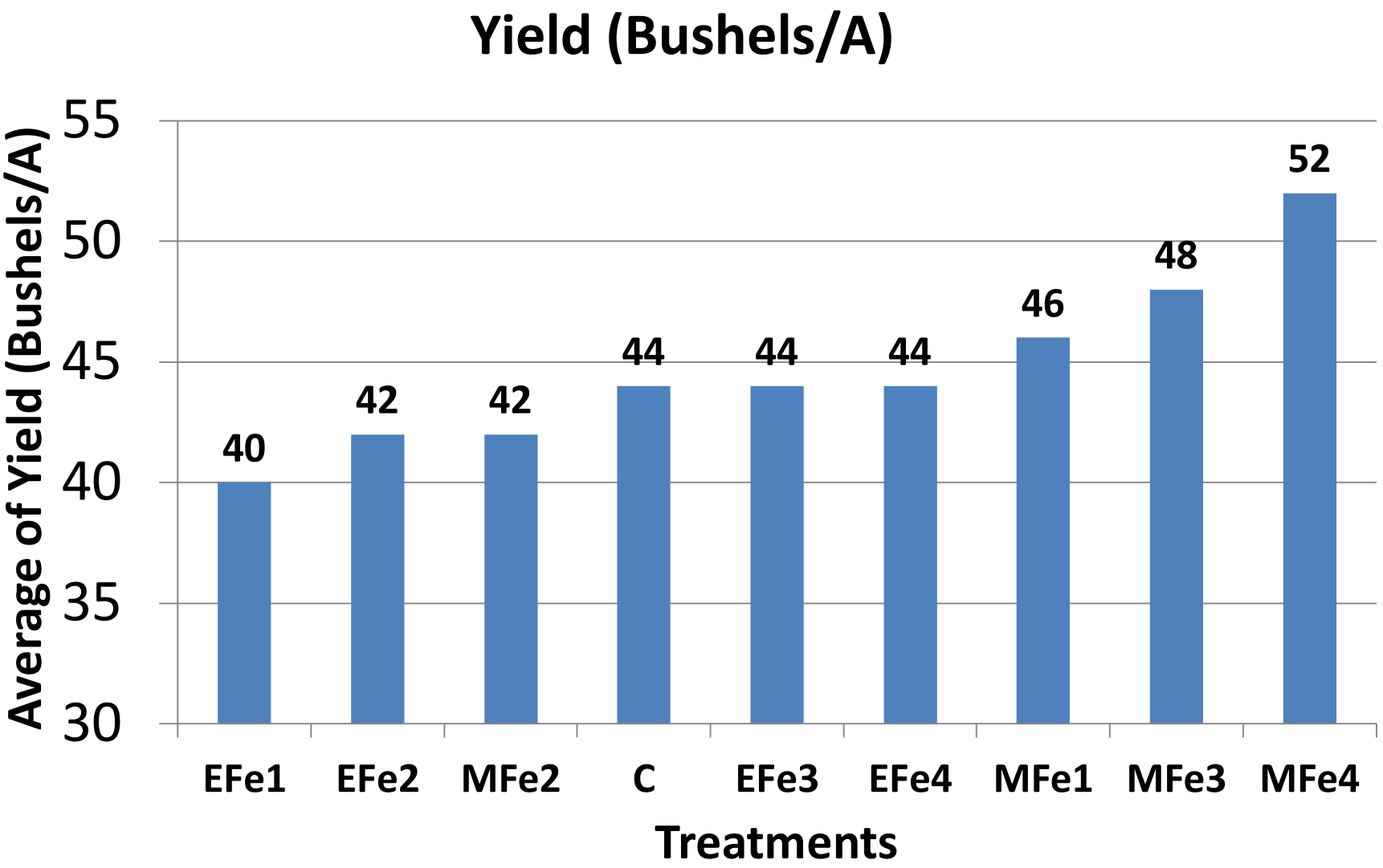

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2015 Commercial Evaluations

Livonia
Batchelor

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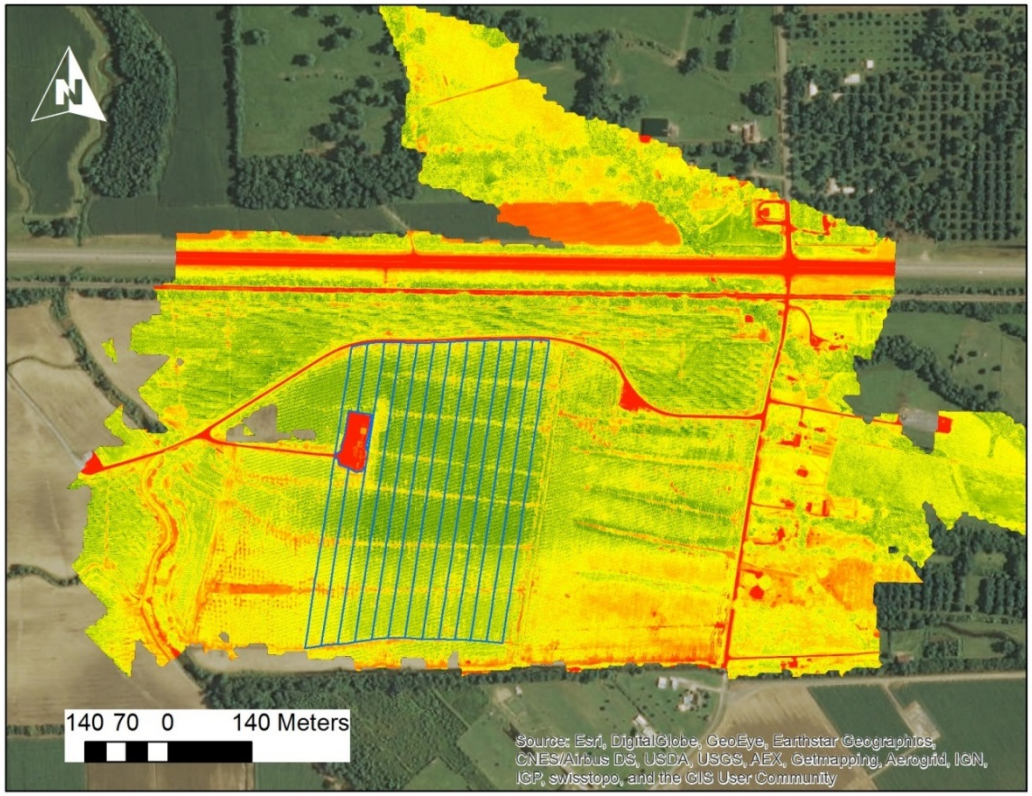
NDVI Images



Experimental Area
Treatment
- Control
- ManniPlex Fe
- ManniPlex Fe + Topguard
- Topguard

NDVI
- High : 1
- Low : -1
- Experimental Area

Map Created by Eduardo Chagas Silva
Map Projection: NAD 1983 UTM Zone 15N
Image Date: Charles Malveaux, 2015

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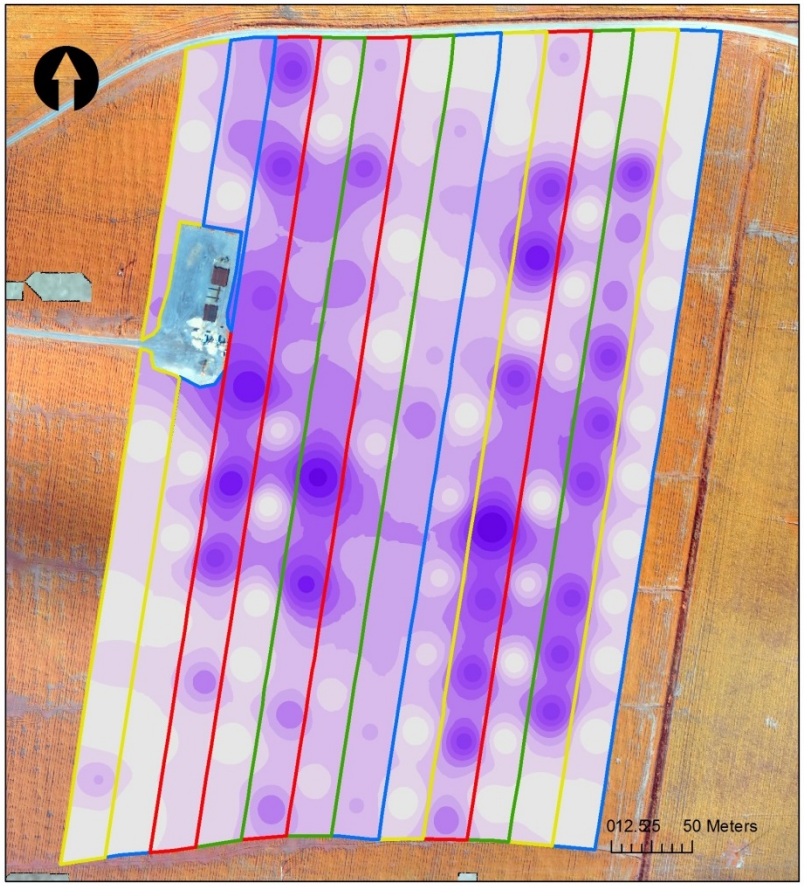
CLB Purple Symptoms



Legend

Treatments

- Control
- ManniPlex Fe
- ManniPlex Fe + Topguard
- Topguard

Purple Symptom

- 0 - 0.71
- 0.72 - 1.3
- 1.4 - 1.9
- 2 - 2.5
- 2.6 - 3.1
- 3.2 - 3.7
- 3.8 - 4.4
- 4.5 - 5.5
- 5.6 - 7.2
- 7.3 - 10

Map Created by Eduardo Chagas Silva
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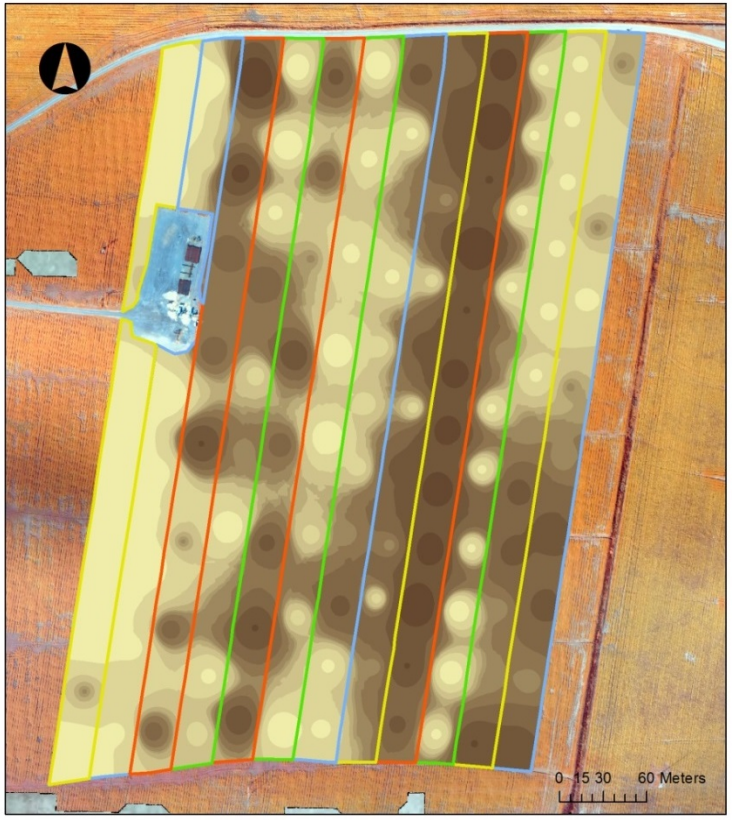
CLB Petiole Symptoms



Legend

- Control
- ManniPlex Fe
- ManniPlex Fe + Topguard
- Topguard

Petiole Symptoms

% Area

- 0 - 1.13
- 1.14 - 1.63
- 1.64 - 1.85
- 1.86 - 1.94
- 1.95 - 1.99
- 2 - 2.08
- 2.09 - 2.3
- 2.31 - 2.8
- 2.81 - 3.93
- 3.94 - 6.5

Map Created by Eduardo Chagas Silva
Map Projection: NAD 1983 UTM Zone 15N
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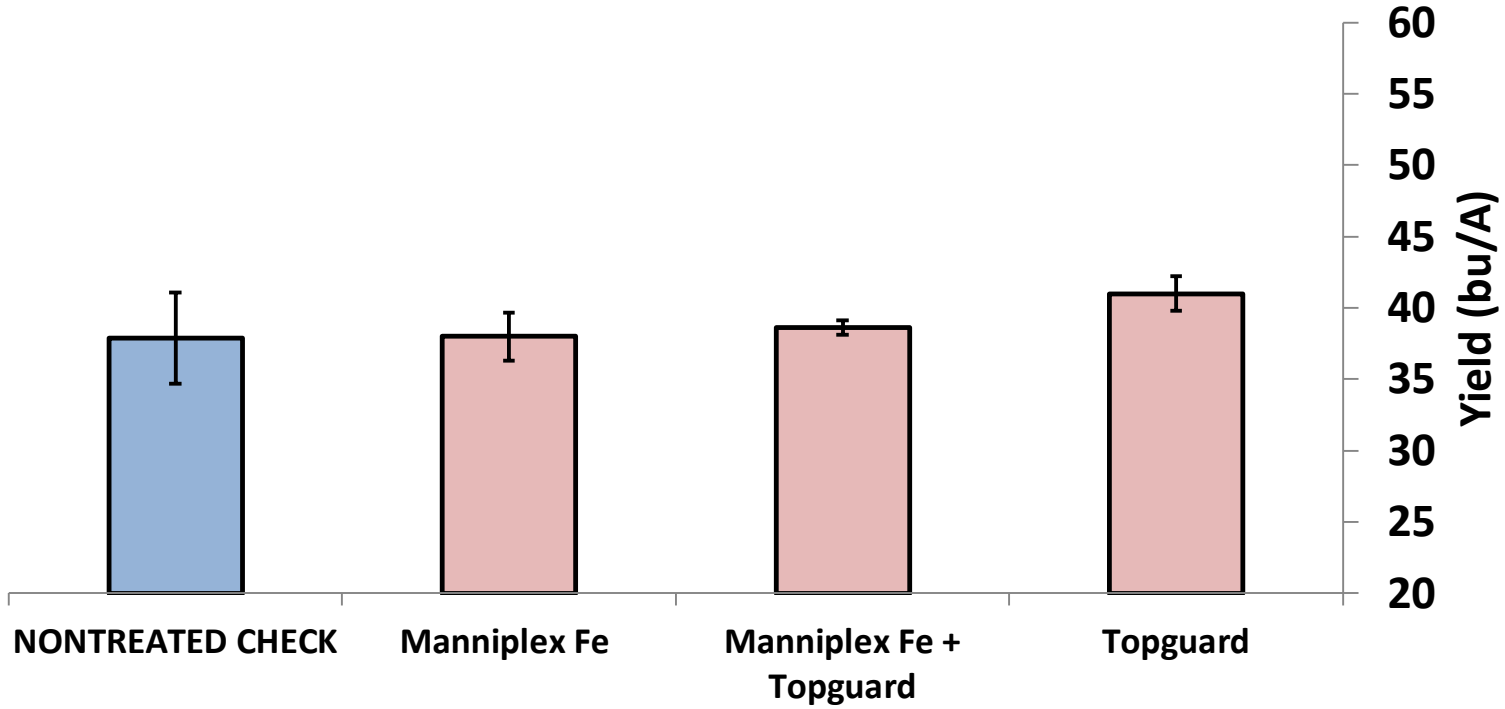
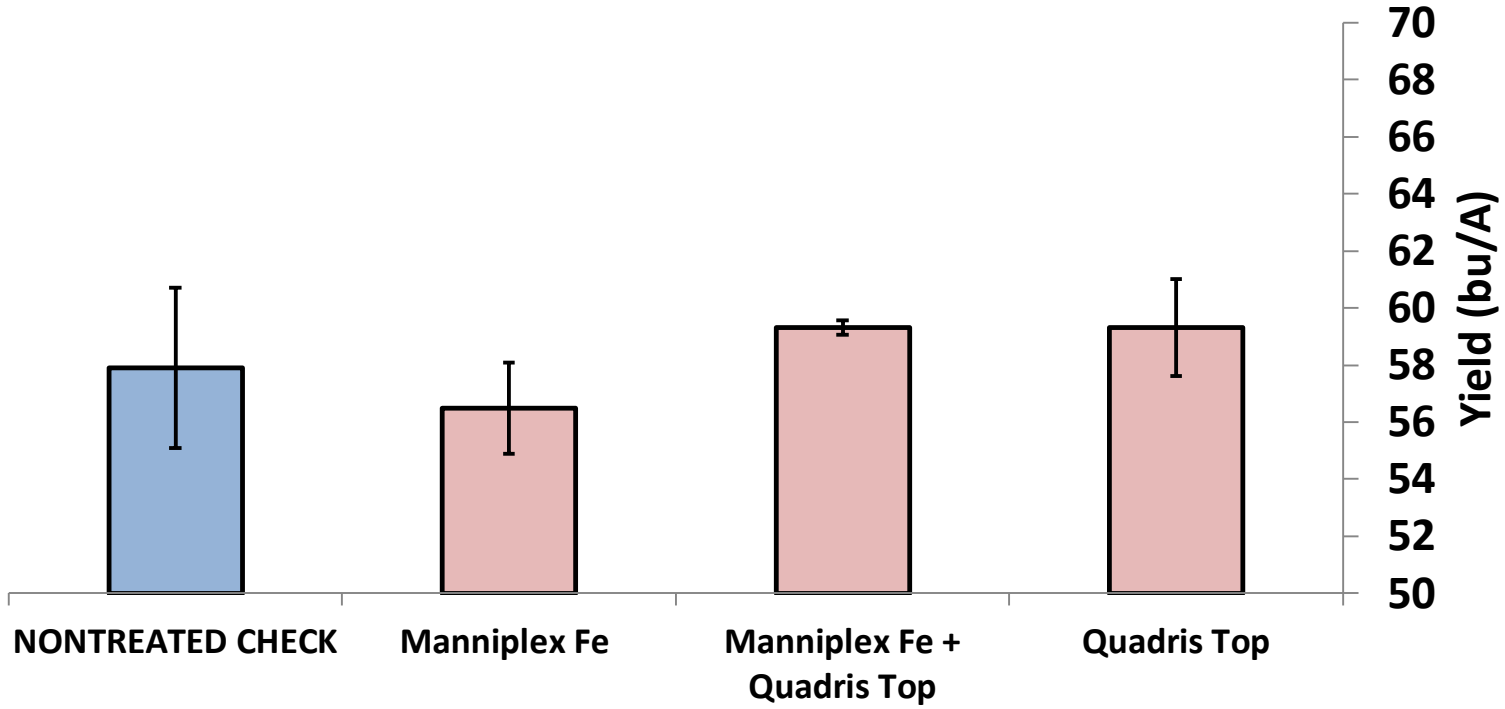
2015 – Yield – Livonia



Error bars represent standard deviation from the mean.

2015 – Yield – Batchelor



Error bars represent standard deviation from the mean.

Soilborne Disease Management

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SDS

Suspected for many years

Confirmed in East Carroll and Franklin in 2014

Not a widespread issue, but worth monitoring (major issue up north).


SDS
southern blight
Phytophthora root rot
nutritional deficiencies
stem canker
Tap root decline
root-knot nematode
red crown rot
fungicide phytotoxicity

Soybean Taproot Decline (TRD) – formerly known as black root rot/mystery disease

- Prevalent in no-till
- Soybean monoculture
- Suspected seedborne
- Suspected debris/soil borne
- Cultivation and/or rotation may reduce incidence and severity

TRD – Field Diagnosis

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TRD –Pathogenicity Testing

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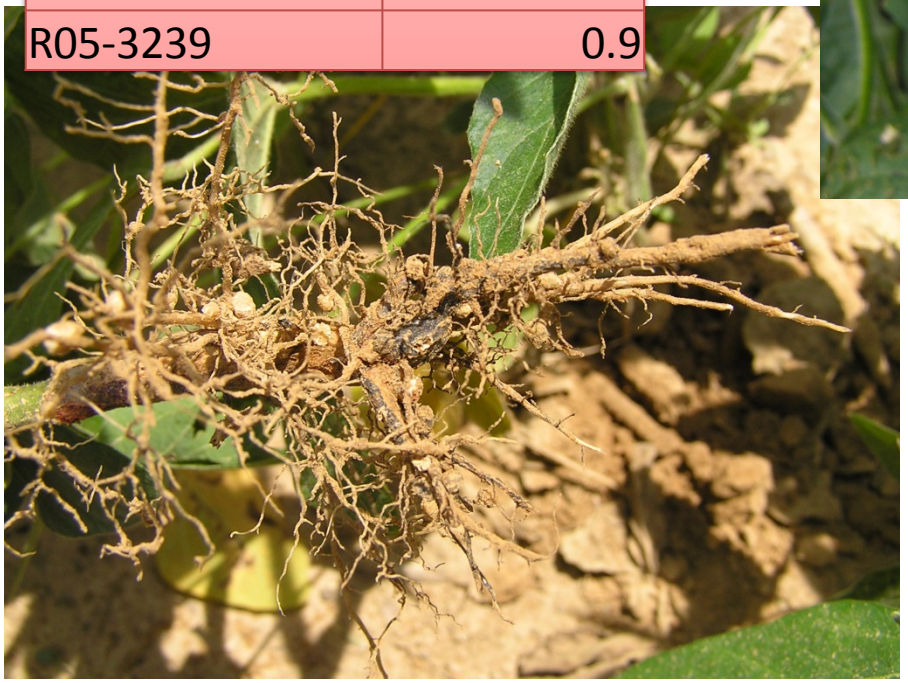
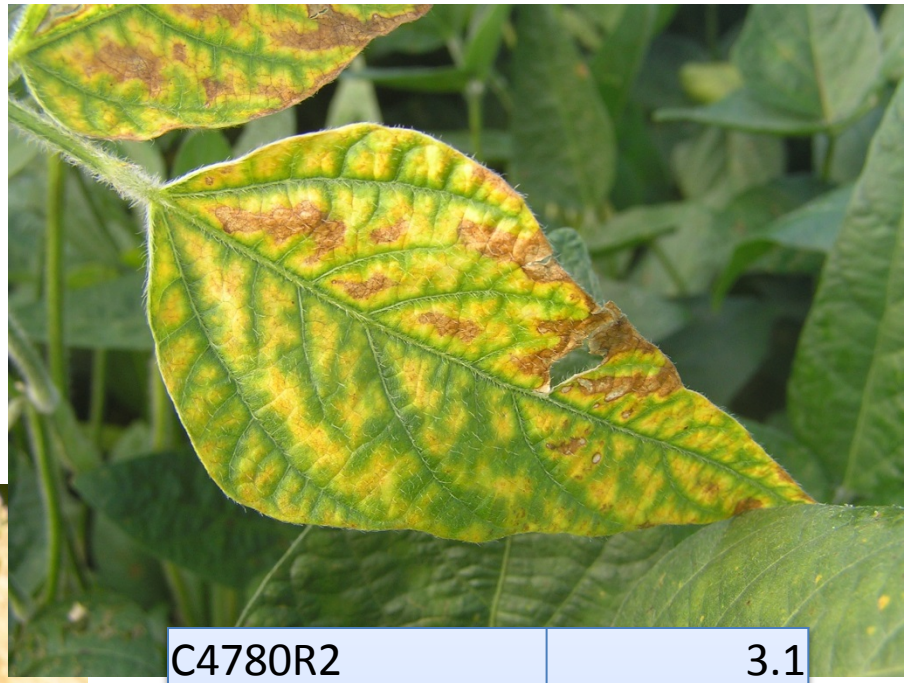
Variety Trials – DLRS 2014 – MG4

HBK LL4953	0.2
Go Soy 4713	0.4
DG 4775 RR2	0.4
Go Soy 4914	0.6
HALO 4:76 LL	0.6
HALO 4.97 LL/STS	0.8
DG 4981 LL/STS	0.9
CZ 4959 RY	0.9
R05-3239	0.9

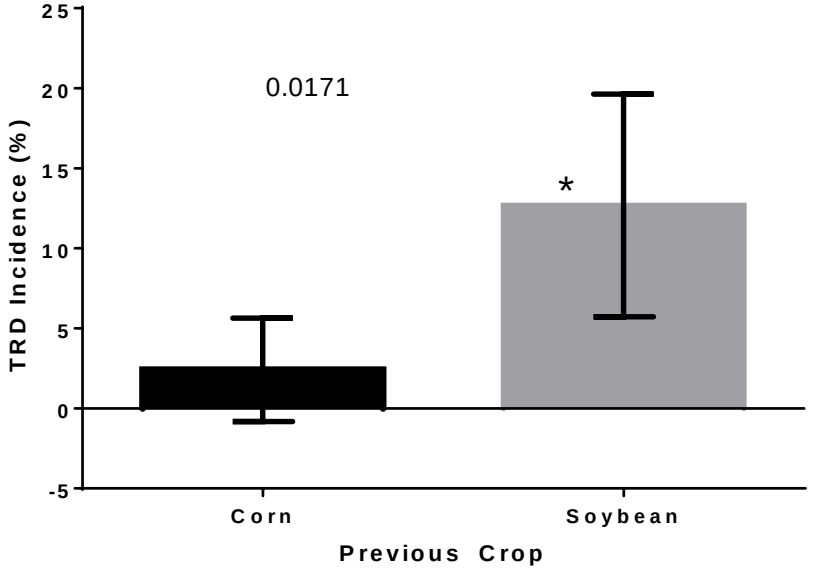


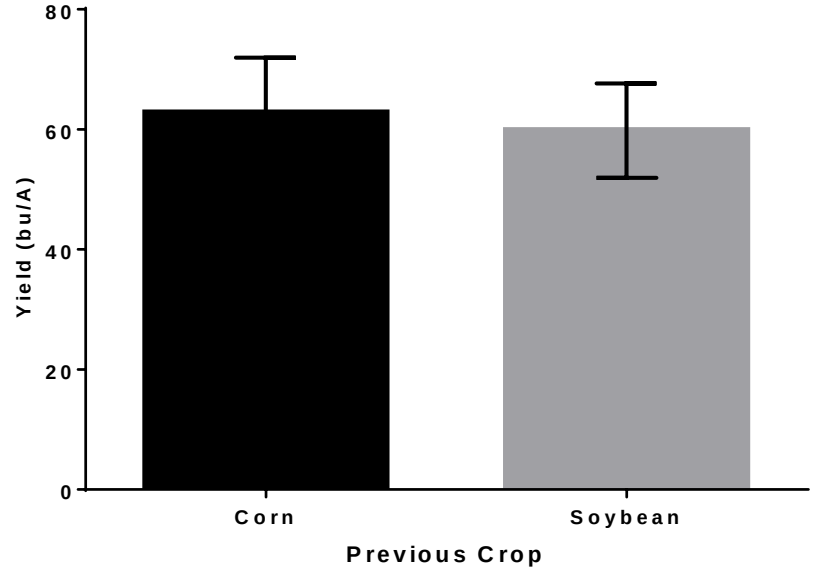


C4780R2	3.1
Dyna-Gro 31RY45	3.1
Dyna-Gro S48RS53	3.1
46-R65	3.1
REV 46R64	3.3
AG 4534	3.7
DG 4685 RR2	3.9
DG 4670 RR2	4
REV 48R44	4.2

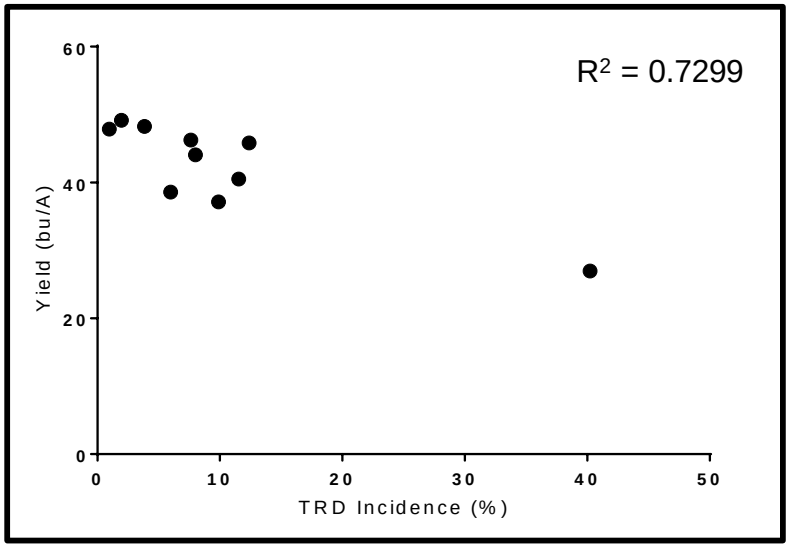
On-farm TRD Yield Loss Studies

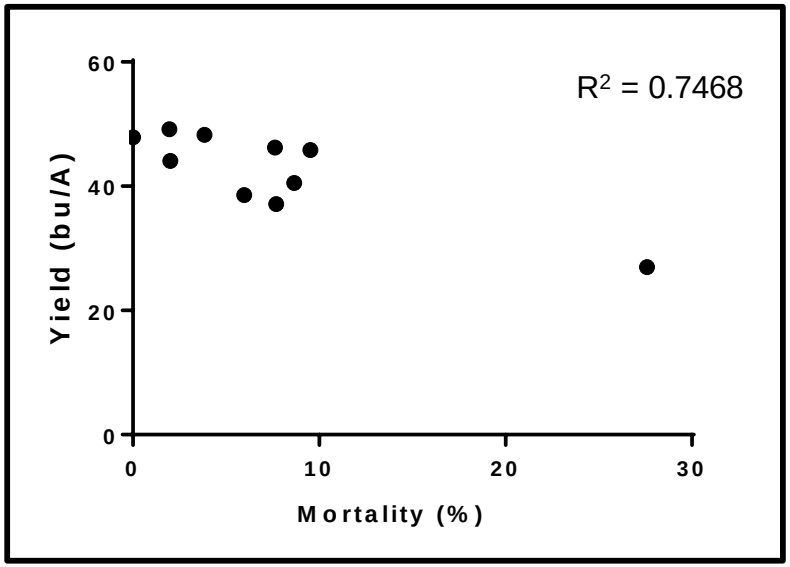
Franklin





East Carroll





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