



DIVISION OF AGRICULTURE

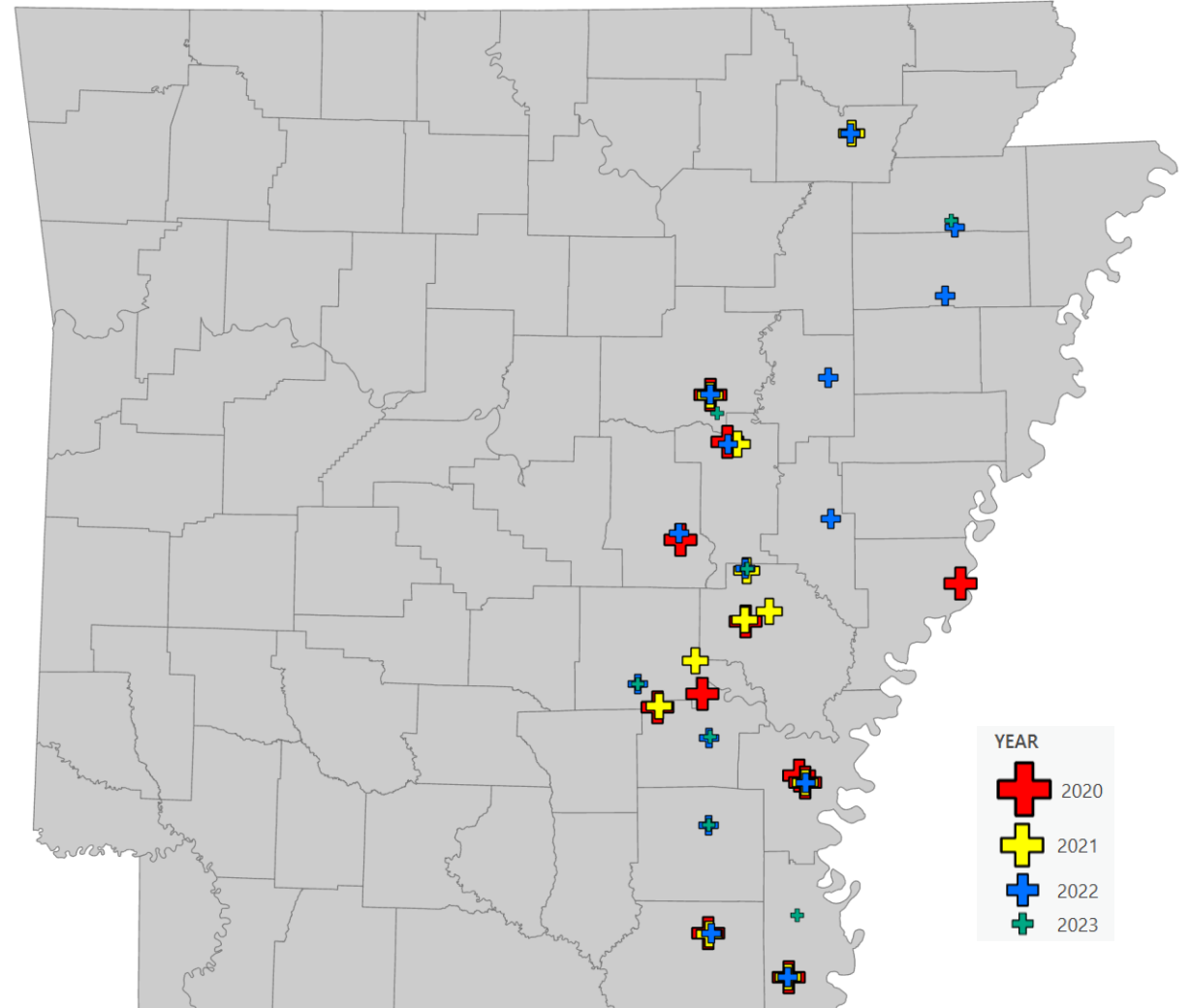
RESEARCH & EXTENSION

University of Arkansas System

**Fungicide Use in Soybean: Should We Change
Our Strategy?**

Dr. Terry N. Spurlock

ON-FARM FUNGICIDE TRIALS 2020 - 2023 (41 trial locations)



ON-FARM FUNGICIDE TRIALS 2020 - 2023



Trial design

- Large plots 1-5 acres each
- One fungicide applied per plot
- Replicated 3 times
- 2020 – 2023 → 41 total trials

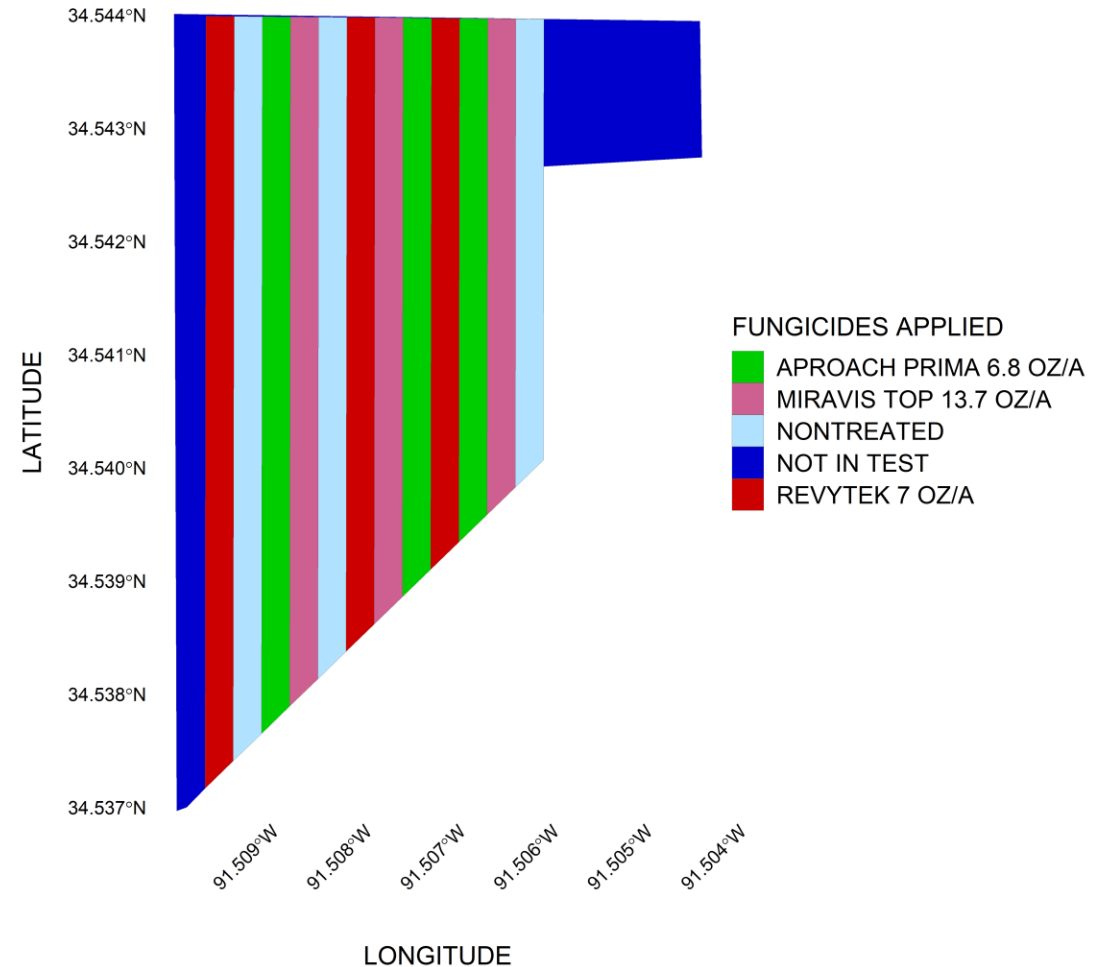
Fungicide application at R3

- 30 ft boom mounted on a ground-driven sprayer
- 10 gal/A at 40 psi using Teejet XR11002VS tips at 5.0 mph

Disease assessments

- 5 georeferenced points per strip
- Collect at a 1.5 m radius around each point
- At application time and at R5
- Visual observation
 - 0 = no diseases; 9 = severe diseases

SPURLOCK PLANT PATHOLOGY FIELD LABORATORY
GRANT BECKWITH / PHIL HORTON ARKANSAS COUNTY SILT LOAM ASGROW 46X0 SOYBEAN



ON-FARM FUNGICIDE TRIALS 2020 - 2023 (41 trial locations)



STANDARD TREATMENTS

MIRAVIS TOP @ 13.7 fl oz/A

Pydiflumetofen - SDHI

Difenoconazole - TRIAZOLE

NONTREATED

OTHER FUNGICIDE(S) – typically containing STROBILURIN

Revytek @ 7 or 8 fl oz/A (7 + 11+ 3)

Trivapro @ 13.7 fl oz/A (7 + 11 + 3)

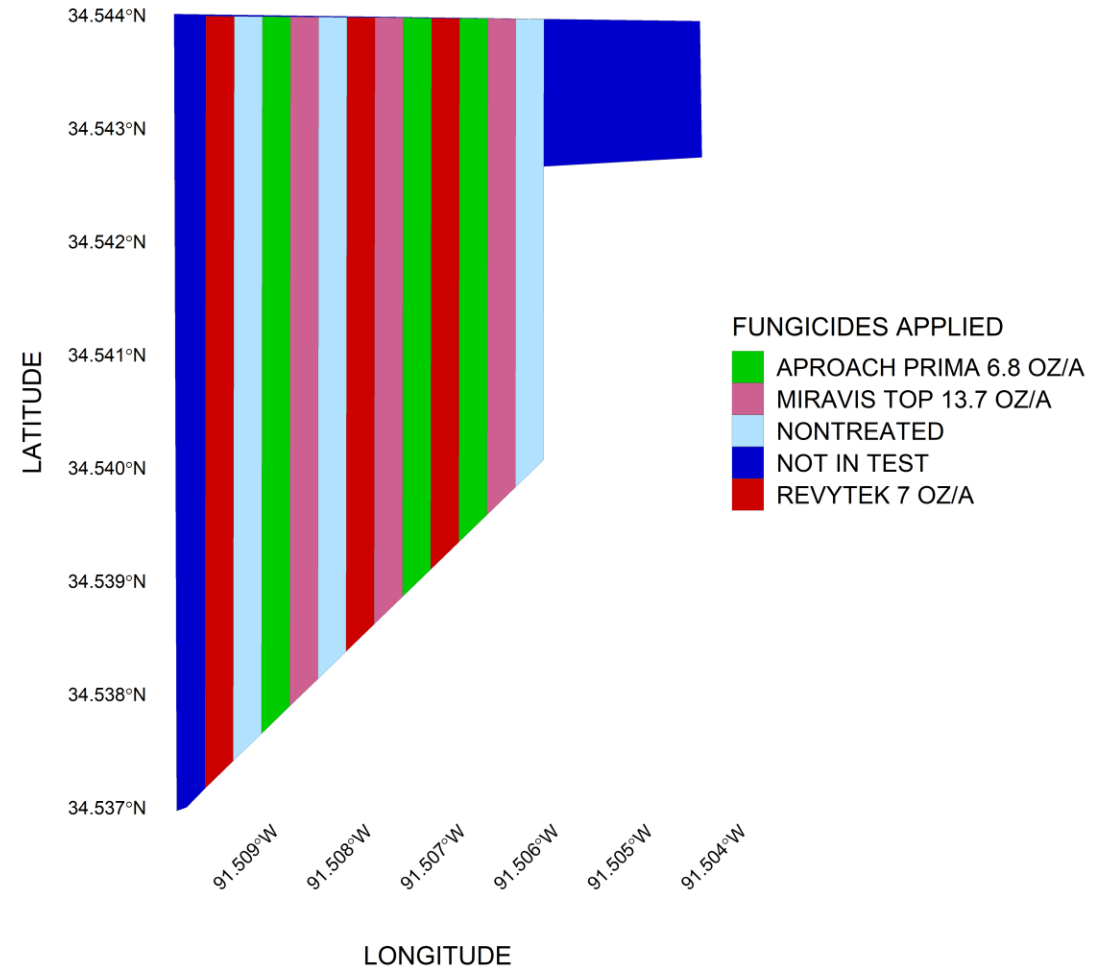
Approach Prima @ 6.8 fl oz/A (11 + 3)

Priaxor @ 4 fl oz/A + Tilt @ 4 fl oz/A (11 + 7)

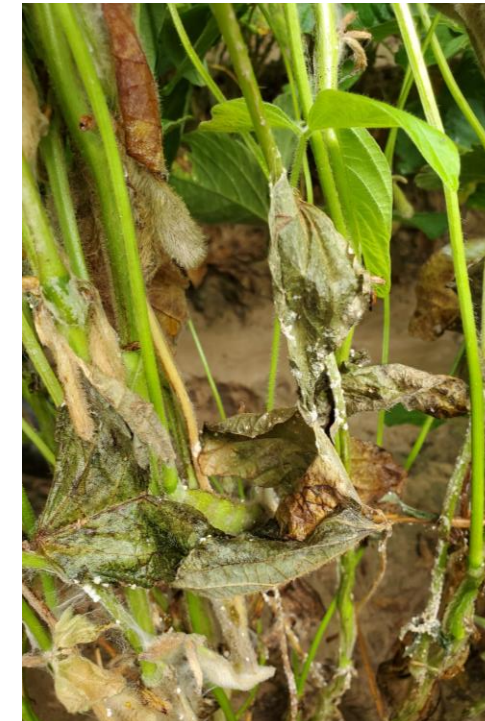
Lucento @ 5.5 fl oz/A (3 + 7)

Domark @ 5 fl oz/A (3)

SPURLOCK PLANT PATHOLOGY FIELD LABORATORY
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Foliar Diseases Rated 2020 - 2023



Target leaf spot
Corynespora cassicola

Frogeye leaf spot
Cercospora sojina

Cercospora leaf blight
Cercospora spp.

Septoria leaf Spot
Septoria glycines

Aerial blight
Rhizoctonia solani AG1-IA

0-9 scale where 9 represents the most severe disease

2020 LOCATION	APPLICATION DATE (GS)	RATING DATE (GS)	DISEASES RATED	DISEASE LEVELS	DISEASE RESPONSE	AVERAGE YIELD RESPONSE (BU/A)	ESTIMATED GAIN FROM FUNGICIDE (BU/A)
Lincoln	June 16 (R2.5)	August 3 (R6)	Target spot	low	NS	NA	---
Lincoln/Jefferson	June 16 (R3)	August 3 (R6)	Septoria brown spot /Target spot	low / low	*/NS	60.1	+1.1
Lonoke	June 17 (R2.5)	July 27 (R6)	Septoria brown spot	high	**	33.8***	+8.9
Chicot	June 18 (R3)	July 28 (R6)	Septoria brown spot	low	*	71.1	+0.8
Phillips	June 30 (R3)	July 30 (R6)	Target spot	low	NS	NA	---
Desha	July 14 (R5)	August 18 (R6)	Target spot	low	*	NA	---
White	July 15 (R4)	August 10 (R6)	Target spot	low	*	49.4	-1.5
Arkansas	July 23 (R2)	September 11 (R6)	Cercospora leaf blight / aerial blight	low / high	NS/**	55.7***	+12
Prairie	August 4 (R2.5)	September 17 (R6)	Soybean rust	high	**	70.1*	+1.8
Ashley	August 10 (R2.5)	September 21 (R6)	Frogeye leaf spot	moderate	NS	51.2*	+4.4

2021 LOCATION	APPLICATION DATE (GS)	RATING DATE (GS)	FOLIAR DISEASES RATED	DISEASE LEVELS	DISEASE RESPONSE	AVERAGE YIELD RESPONSE (BU/A)	ESTIMATED GAIN FROM FUNGICIDE (BU/A)
Lincoln	June 29 (R3)	August 24 (R6)	No foliar diseases rated	low	NS	51.0	+ 2.0
Arkansas A	June 30 (R3)	August 30 (R6)	Septoria brown spot / aerial blight	high / moderate	*** / ***	75.7***	+ 4.9
Jefferson	July 8 (R3)	August 24 (R6)	Frogeye leaf spot / Cercospora leaf blight / target spot	low / low / low	NS / *** / **	98.9	- 0.5
Chicot	July 9 (R3)	August 31 (R6)	Frogeye leaf spot / Cercospora leaf blight	low / low	NS / NS	64.1	+ 1.4
Lawrence	July 26 (R3)	September 9 (R6)	Target spot	low	NS	79.3	+ 1.2
White	July 27 (R3)	September 14 (R6)	Frogeye leaf spot / target spot	moderate / low	*** / NS	56.6***	+ 4.6
Arkansas B	July 29 (R3)	September 13 (R6)	Target spot / Cercospora leaf blight	moderate / low	*** / NS	72.2***	+ 8.0
Prairie	August 5 (R3)	September 14 (R6)	Septoria brown spot / target spot	moderate / moderate	*** / ***	44.5 ***	+ 2.2
Ashley	August 12 (R3)	September 23 (R6)	Frogeye leaf spot / target spot	high / moderate	* / NS	NA	---
Arkansas C	August 16 (R3)	September 22 (R6)	Frogeye leaf spot / aerial blight	high / high	*** / ***	44.7***	+ 9.3

CHICOT CO.

FUNGICIDES APPLIED	SEPTORIA BRO INCIDENCE
MIRAVIS TOP 13.7 FL OZ/A	23.94
NONTREATED	48.33
REVYTEK 8 FL OZ/A	8.06

LONOKE CO.

FUNGICIDES APPLIED	SEPTORIA BRO INCIDENCE
MIRAVIS TOP 13.7 FL OZ/A	7.29
NONTREATED	85.41
REVYTEK 8 FL OZ/A	27.08

LINCOLN/JEFFERSON

FUNGICIDES APPLIED	SEPTORIA BRO INCIDENCE
MIRAVIS TOP 13.7 FL OZ/A	17.22
NONTREATED	26.00
REVYTEK 8 FL OZ/A	9.34



Means having the same letter are not significantly different using Tukey's honest significant difference test $P = 0.05$.

ARKANSAS CO.

2021

FUNGICIDES APPLIED	SEPTORIA BROWN SPOT SEVERITY (0-9)	AERIAL BLIGHT (PER 5 METERS)	YIELD BU/A
MIRAVIS 13.7 OZ/A	2.1 a	3.2 b	78.4 c
NONTREATED	6.2 c	3.1 b	72.4 a
REVYTEK 7 OZ/A	3.4 b	0.8 a	76.2 b

PRAIRIE CO.

FUNGICIDES APPLIED	SEPTORIA BROWN SPOT SEVERITY (0-9)	TARGET SPOT SEVERITY (0-9)	YIELD BU/A
MIRAVIS TOP 13.7 OZ/A	0.1 a	1.1 a	45.7 b
NONTREATED	4.0 b	2.4 b	43.5 a
REVYTEK 7 OZ/A	0.0 a	1.6 a	45.5 b

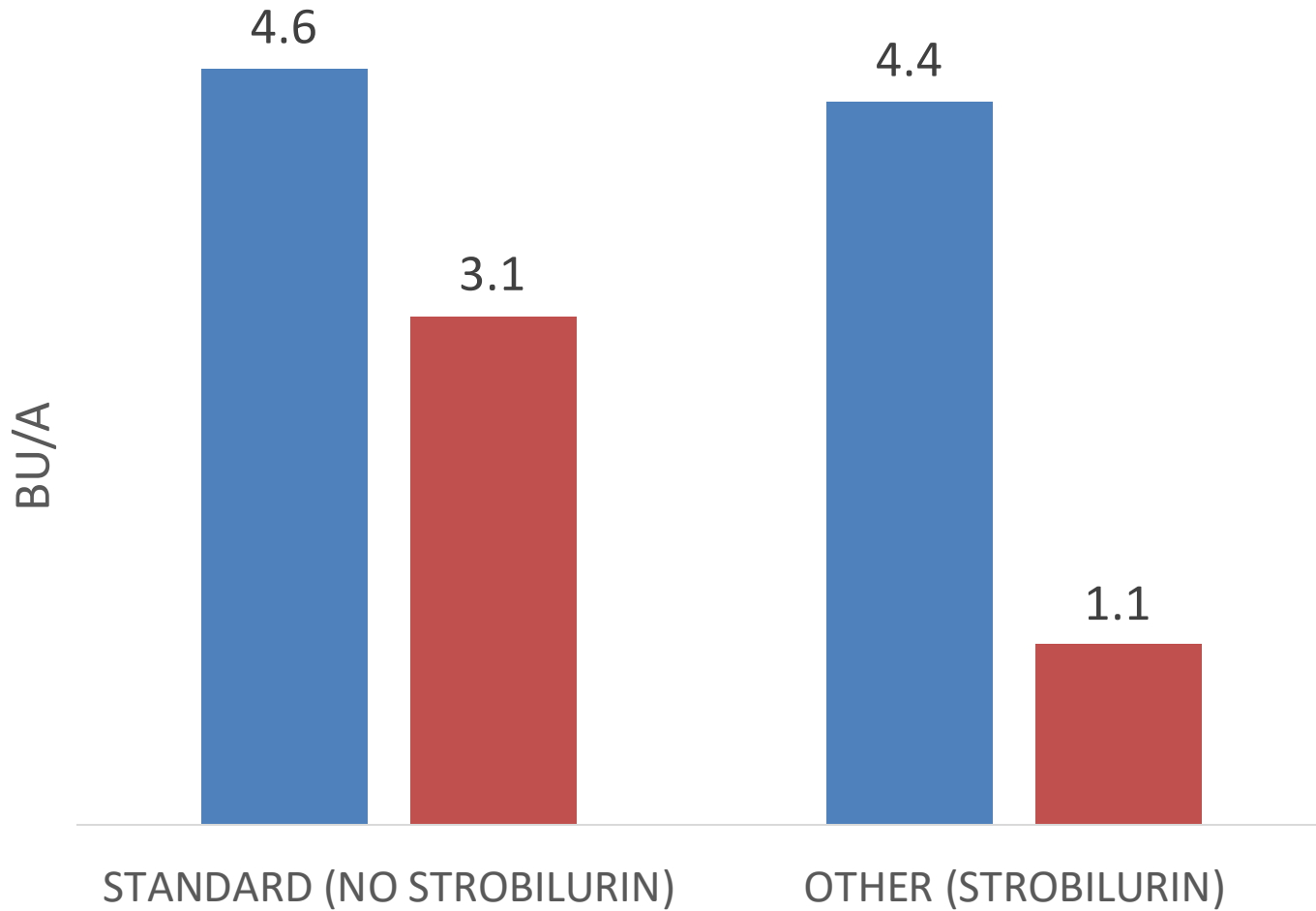
Means having the same letter are not significantly different using Tukey's honest significant difference test P = 0.05.

2022 LOCATION	APPLICATION DATE (R3)	RATING DATE (R6)	FOLIAR DISEASES RATED	DISEASE LEVELS	DISEASE RESPONSE	AVERAGE YIELD RESPONSE (BU/A)	ESTIMATED GAIN FROM FUNGICIDE (BU/A)
ARKANSAS	7/14/2022	9/10/2022	TARGET SPOT / FROGEYE LEAF SPOT	HIGH / MODERATE	** / *	74.48***	+ 9.89
POINSETT	7/15/2022	9/12/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / MODERATE	** / **	67.91***	+ 4.9
DREW	7/22/2022	8/31/2022	TARGET SPOT / AERIAL BLIGHT	LOW / HIGH	NS / **	NA	---
WOODRUFF	7/26/2022	8/29/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / MODERATE	*** / **	70.78**	+ 4.93
LINCOLN	7/27/2022	9/12/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / LOW	** / NS	61.51***	+ 2.07
MONROE	7/29/2022	8/26/2022	TARGET SPOT / FROGEYE LEAF SPOT	LOW / LOW	NS / ***	102.62***	+ 6.75
ASHLEY	8/3/2022	9/15/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / LOW	NS / NS	46.31***	+ 1.77
PRAIRIE	8/8/2022	9/8/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / LOW	* / *	59.3***	+ 4.06
WHITE	8/9/2022	9/21/2022	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE / MODERATE	*** / ***	72.65***	+5.32
LAWRENCE	8/15/2022	9/28/2022	CERCOSPORA LEAF BLIGHT / FROGEYE LEAF SPOT	MODERATE / LOW	** / NS	73.56	-1.0
CRAIGHEAD	8/16/2022	9/29/2022	TARGET SPOT / FROGEYE LEAF SPOT	LOW / MODERATE	NS / **	44.48***	+ 1.63
LONOKE	8/23/2022	10/4/2022	CERCOSPORA LEAF BLIGHT / FROGEYE LEAF SPOT	LOW / LOW	NS / *	52.55	+ 3.04

2023 LOCATION	APPLICATION DATE (R3)	RATING DATE (R6)	FOLIAR DISEASES RATED	DISEASE LEVELS	DISEASE RESPONSE	AVERAGE YIELD RESPONSE (BU/A)	ESTIMATED GAIN FROM FUNGICIDE (BU/A)
JEFFERSON	6/2/2023	7/18/2023	---	LOW	NA	61.40	0.5
ARKANSAS A	6/5/2023	8/1/2023	TARGET SPOT / FROGEYE LEAF SPOT	LOW	NS/NS	72.50	3.1
CRAIGHEAD	6/28/2023	8/23/2023	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE/LOW	**/NS	83.28***	1.75
CHICOT	7/18/2023	8/30/2023	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE/MODERATE	**/*	52.98	6.6
DREW	7/20/2023	8/28/2023	TARGET SPOT / AERIAL BLIGHT	LOW/MODERATE	NS/**	25.20	1.7
ARKANSAS B	7/26/2023	9/26/2023	TARGET SPOT / CERCOSPORA LEAF BLIGHT	LOW/MODERATE	*/***	68.03*	3.6
WHITE	7/26/2023	8/24/2023	TARGET SPOT / FROGEYE LEAF SPOT	MODERATE/MODERATE	*/***	61.10***	5.5
LINCOLN	7/28/2023	9/18/2023	TARGET SPOT / FROGEYE LEAF SPOT	HIGH/HIGH	*/***	74.71***	2.1

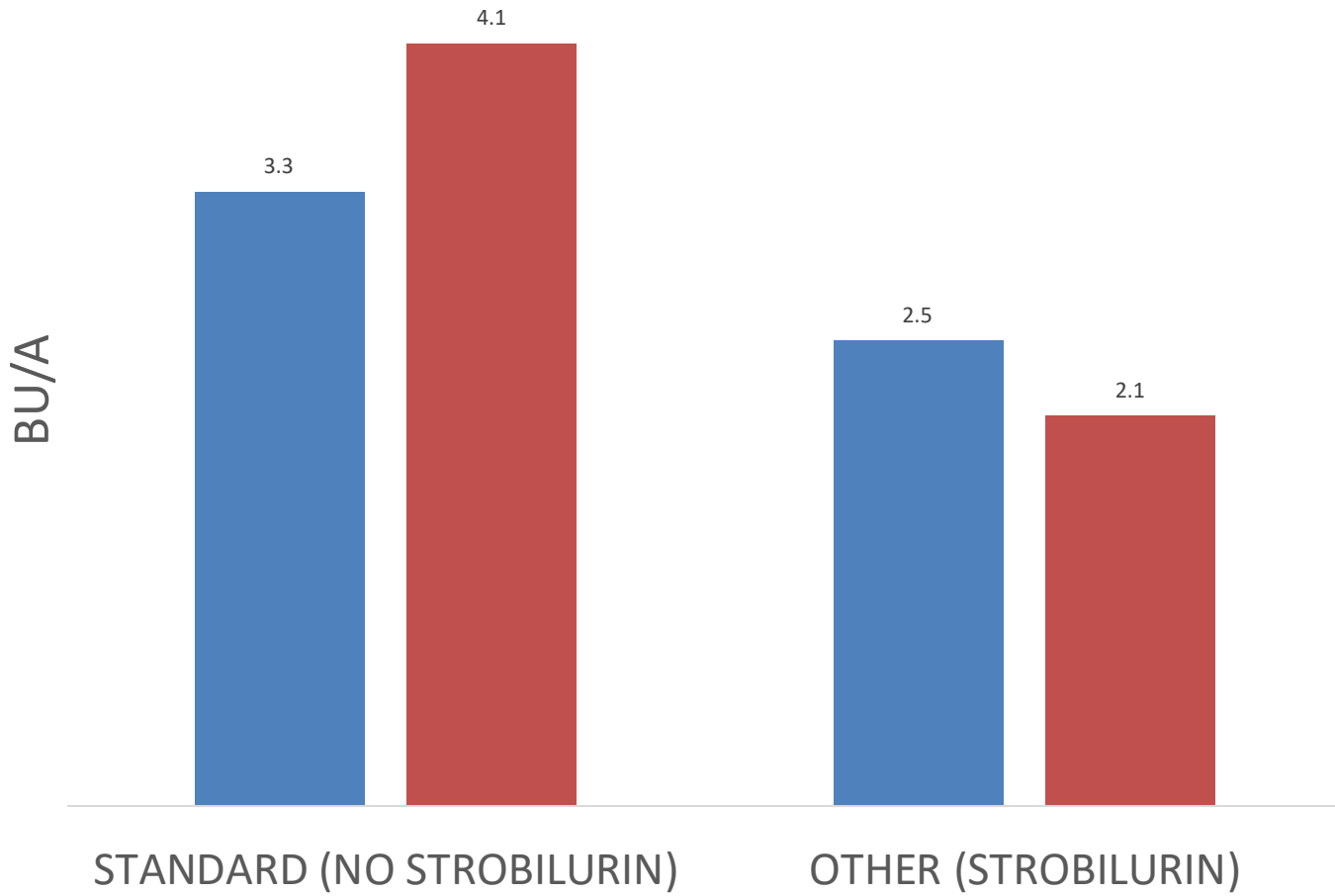
YIELD GAIN COMPARED TO NONTREATED CONTROL

■ NO TARGET SPOT (N = 10) ■ TARGET SPOT (N = 18)



YIELD GAIN COMPARED TO NONTREATED CONTROL

■ NO FROGEYE LEAF SPOT (N = 15) ■ FROGEYE LEAF SPOT (N =13)



What has 4 years of fungicide trials taught us?

- R3 mid-July and later increases chance to protect yield with a fungicide
- Disease pressure increases as
 - temperatures decreases
 - rainfall increases
- Mixed mode of action products are effective
 - strobilurin containing pre-mix less effective on target spot and frog-eye leaf spot

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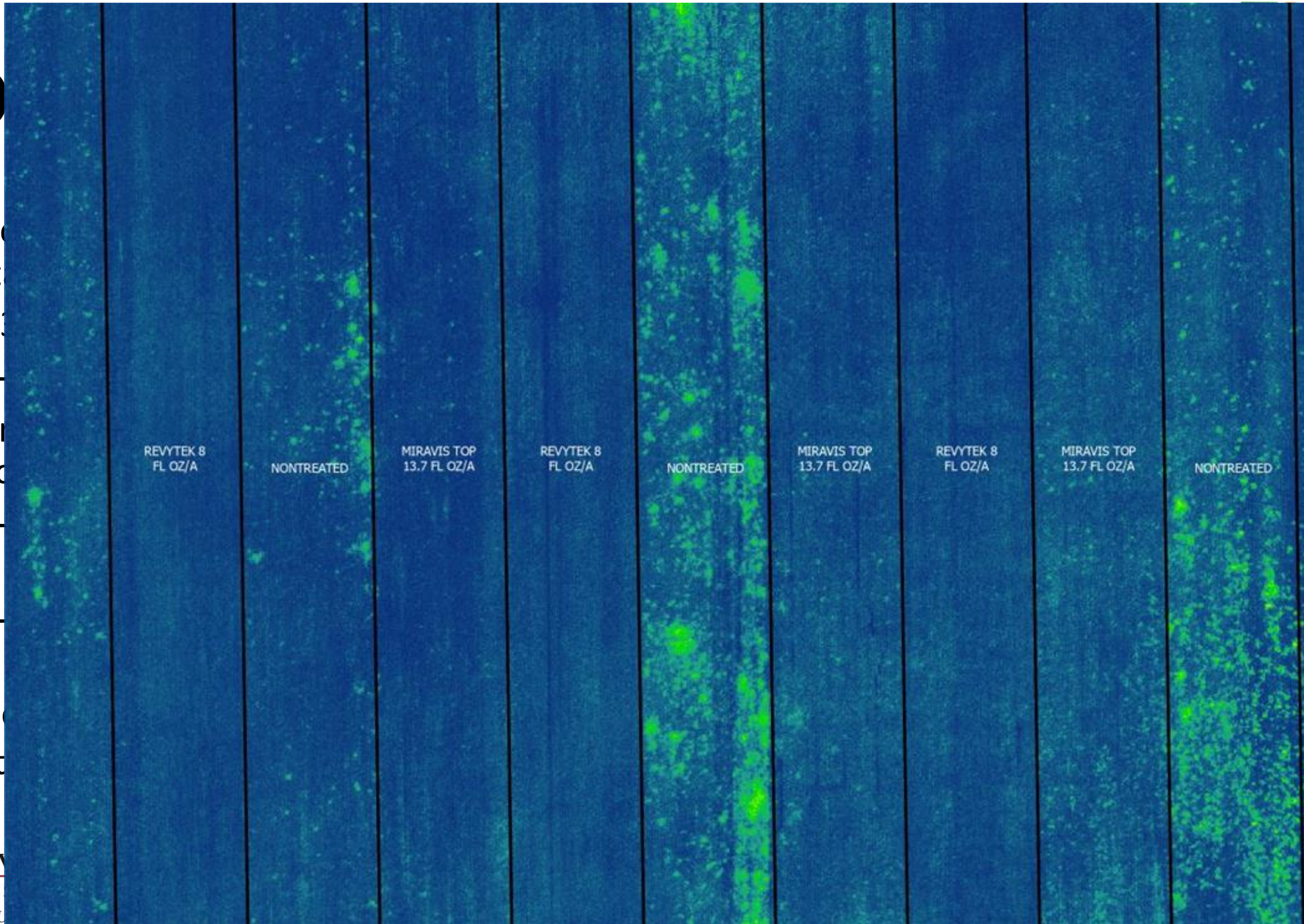
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