

“MU Certified” Strip Trial Program

Report: R3 Soybean Fungicide Test: Three-year Yield Summary

The objective of this trial is to test the effectiveness of an R3 fungicide application to soybean to reduce foliar disease and increase yield. The trial has two treatments:

1. Strips with the farmer’s choice of fungicide applied at R3.
2. Strips with no R3 fungicide application.
 - The farmer chose what fungicide product they wanted to apply.
 - The farmer had control of all the other management decisions in the trial including any other pesticide applications.

This report summarizes trial results from 33 tests in 2018, 2019, and 2020.

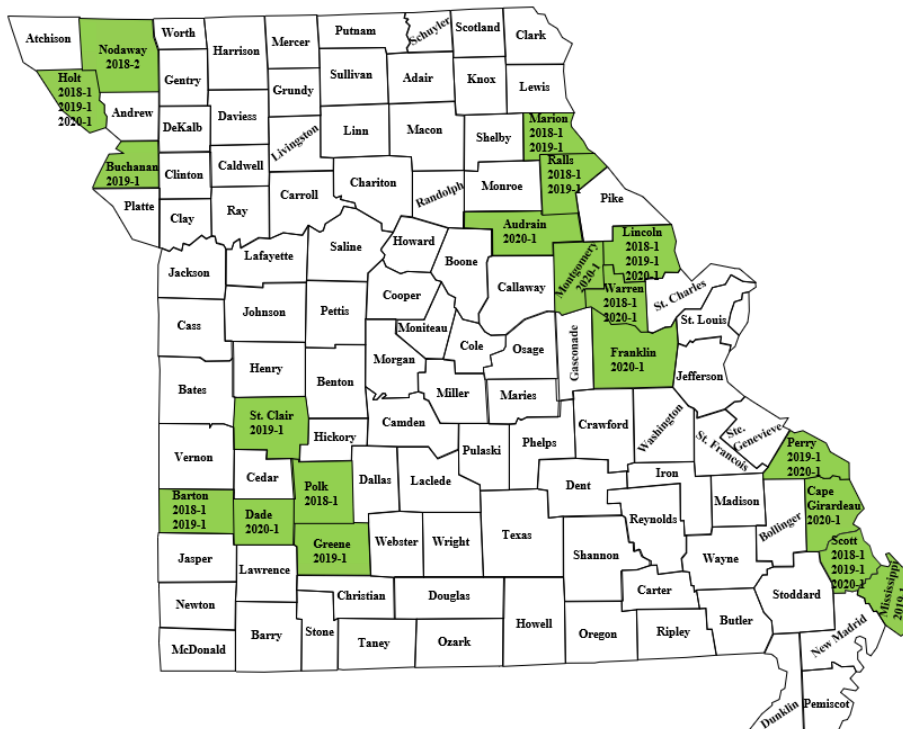


Figure 1. Trial locations. There were 10 trials in 2018, 12 in 2019 and 11 in 2020.

Key conclusion:

- **Across these 33 trials, an R3 fungicide application increased yield.**
 The median response was 1.5 bushels per acre and a 90% probability that the response across all locations was 1.2 to 2.2 bushels per acre. *Additional trial details are on the following pages of this report.*

If you are interested in participating in this trial in 2021 or have questions/comments please contact your local Extension Agronomist or Agricultural Engineer.

This on-farm research was supported by the Missouri Soybean Merchandizing Council (award No. 18-415) and University of Missouri Extension.

This on-farm research is only possible with the cooperation of Missouri Soybean farmers who volunteered to implement trials on their fields and the Regional MU Extension faculty that supported them.

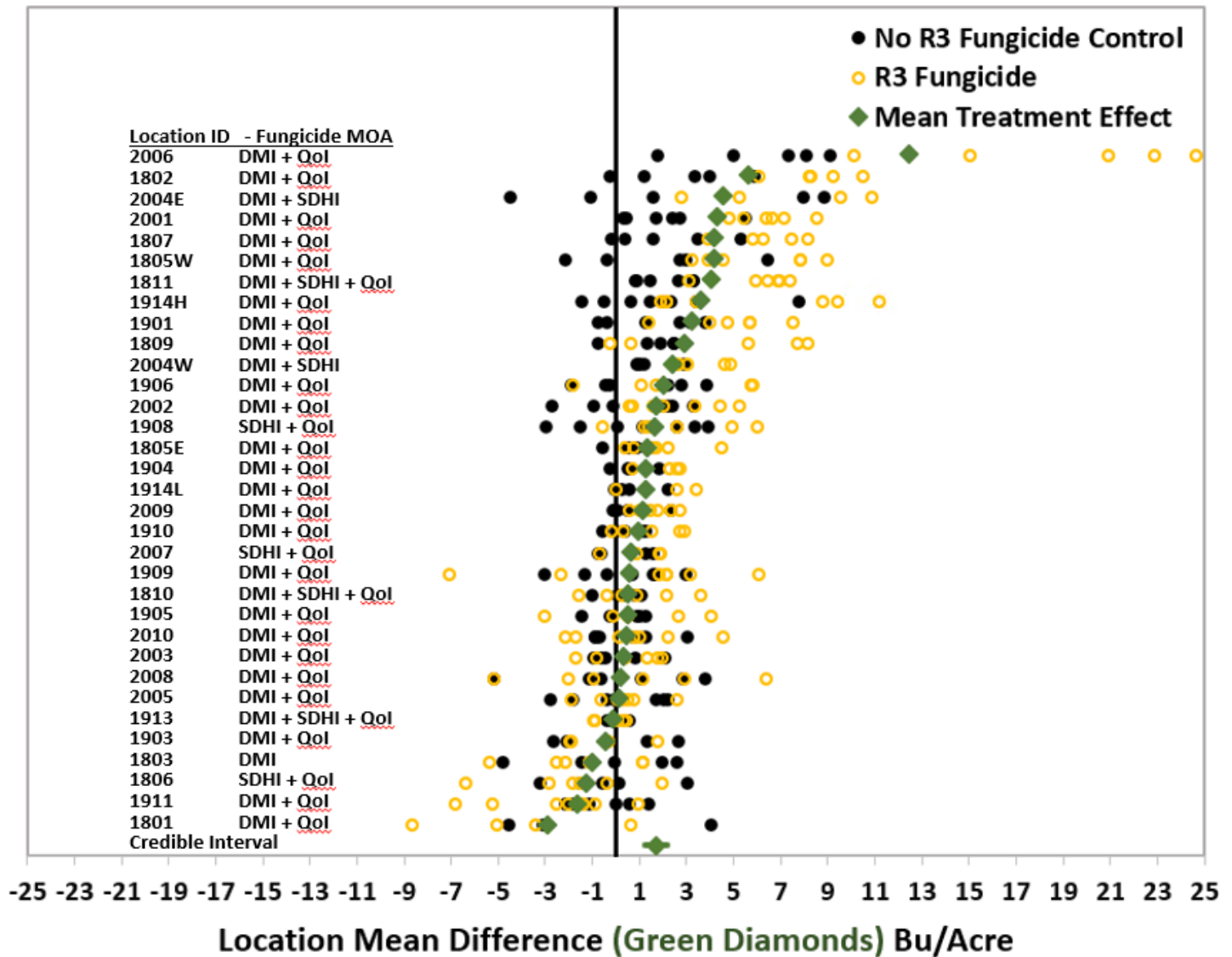


Figure 2. Effect of R3 fungicide application on soybean yield. This graph shows yield from every strip in 33 trials across three years. The first two numbers of the location ID are the year. MOA is fungicide mode of action.

How to interpret this graph.

Green diamonds are the mean effect of fungicide treatment for each location.

- Diamonds right of the center line indicate the mean effect at that location was positive, the yield increased.

Black (no R3 fungicide) and **gold** (R3 fungicide) symbols are strip yields for each location, as the difference from the location mean.

- Points to the right of the green triangle are strips with yield greater than average.
- Points to the left of the green triangle are strips with yield less than average.
- A location with most gold symbols to the right and most black symbols to the left of the green triangle likely benefited from fungicide.

Credible interval is the expected yield effect of R3 Fungicide based on these 33 trials (95% to 5% probability).

- Mean effect was 1.7 bushels per acre. 95% credible interval is 1.2 to 2.2 bushels per acre.

R3 Fungicide Application on Soybean: Three-year Yield Summary Report

Table 1. Location and soybean variety details. First two numbers in location ID is the year.

ID	County	Strips	Planting Date	Variety	RM	FLS	SDS	RW	Irr.
1801	Ralls	7	4/26/18	Stine 41LF32 LL	4.1	2	1	15	N
1802	Barton	10	5/31/18	P44T63R	4.4	-	-	30	Y
1803	Polk	12	6/6/18	Stine 50LF32	5.0	2	4.5	75	N
1805	Nodaway	11	5/9/18	AG40X6	4.0	NR	3	15	N
18905	Nodaway	11	5/9/18	AG39X7	3.9	6	3	15	N
1806	Warren	12	5/5/18	Beck's 394L4	3.9	1	2	15	N
1807	Scott	10	6/12/18	Stine 44LH22 LL	4.4	2	4	7.5	N
1809	Holt	10	5/15/18	Momentum 38CO5	3.8	-	-	15	N
1810	Marion	12	5/8/18	Lewis 4372X	4.3	6	3	15	N
1811	Lincoln	12	5/26/18	Stine 42LH02	4.2	2	4	15	N
1901	Barton	12	6/14/19	Croplan RX4825	4.8	2	1	30	Y
1903	Greene	8	6/18/19	Pioneer P52A43L	5.2	4	3	7.5	N
1904	Holt	10	6/16/19	eMerge e3782S	3.7	2	2	15	N
1905	Scott	10	6/13/19	2 varieties	4.7/4.3	2/2	4/2	7.5	N
1906	Lincoln	12	6/10/19	Becks 394L4	3.9	1	2	15	N
1908	Marion				-	-	-		N
1909	St. Clair	14	6/10/19	Pioneer 47A76L	4.7	2	4		N
1910	Buchanan	11	6/6/19	Pioneer P29A85L	2.9	-	-	15	N
1911	Perry	16	5/25/19		-	-	-	20	N
1913	Mississippi	11	5/28/19	Asgrow AG43X7	4.3	3	6		N
1914	Ralls	15	6/4/19	Stine 36EB02	3.6	9	NR		N

RM=Relative maturity; FLS=frogeye leaf spot; SDS=Sudden death syndrome; RW=row width; Irr.=Irrigated (yes/no); NR=not reported.

Table 2. R3 fungicide application detail.

ID	Spray Date	Fungicide	Rate (oz./A)	Group	MOA
1801	7/19/18	Cover XL	10.5	3, 11	DMI+QoI
1802	7/25/18	Fortix	5.0	3, 11	DMI+QoI
1803	8/29/18	Onset	4.0	3	DMI
1805	7/24/18	Aframe Plus	10.5	3, 11	DMI+QoI
1806	8/1/18	Priaxor	4.0	7, 11	SDHI+QoI
1807	8/14/18	Azoxypop	10.0	3, 11	DMI+QoI
1809	7/23/18	Aframe Plus	15.6	3, 11	DMI+QoI
1810	7/10/18	Trivapro	13.7	3, 7, 11	DMI+SDHI+QoI
1811	7/17/18	Trivapro	13.7	3, 7, 11	DMI+SDHI+QoI
1901	8/1/19*	Fortix	5.0	3, 11	DMI+QoI
1903	8/29/19	Headline Amp	10.0	3, 11	DMI+QoI
1904	8/7/19	Aframe Plus	16.0	3, 11	DMI+QoI
1905	8/15/19	Azoxypop	10.5	3, 11	DMI+QoI
1906	8/10/19	Delaro 325SC	5.0	3, 11	DMI+QoI
1908	8/15/19		4.0	7, 11	SDHI+QoI
1909	8/14/19	Delaro 325SC	8.0	3, 11	DMI+QoI
1910	7/19/19*	Fortix	4.0	3, 11	DMI+QoI
1911	8/11/19	Cover XL	12.8	3, 11	DMI+QoI
1913	8/13/19	Trivapro	10.0	3, 7, 11	DMI+SDHI+QoI
1914	8/16/19	Stratego YLD	15.6	3, 11	DMI+QoI

MOA=mode of action.

R3 Fungicide Application on Soybean: Three-year Yield Summary Report

Table 3. Scouting summary. Disease rating is on a scale of 0 to 100. A score of 25 or greater is considered a high disease index. Greater than 50 is very high.

Location ID	County	Delta Yield (bu/A)	Septoria			Frog Eye			Downy Mildew			Sudden Death Syndrome		
			Pre	Post No Spray	Post Spray	Pre	Post No Spray	Post Spray	Pre	Post No Spray	Post Spray	Pre	Post No Spray	Post Spray
1801	Ralls	-2.9	1.8	6.3	5.3									
1802	Barton	5.6	3.4	1.3	0.7									
1803	Polk	-1.0	9.7	12.7	11.4	-	1.6	0.8						
18905	Nodaway	1.3	-	-	-	<0.01	0.01	0.03						
1806	Warren	-1.2	5.4	4.2	2.6	-	0.3	0.04						
1807	Scott	4.2	0.6	1.0	1.1	-	0.02	0.04						
1809	Holt	2.9	-	2.6	4.2	0.01	4.7	14.4						
1810	Marion	0.5	2.3	4.4	2.8	-	0.02	0.02						
1811	Lincoln	4.1	0.5	9.4	6.2	0.03	-	-						
1901	Barton	3.2	0.1	1.0	0.7									
1903	Greene	-0.4	0.6	3.1	2.0	-	0.01	0.01						
1904	Holt	1.2	0.1	3.9	3.3									
1905	Scott	0.5	0.4	1.0	0.9	0.07	-	-						
1906	Lincoln	2.0	0.4	3.0	2.8									
1908	Marion	1.7	0.7	1.2	0.8									
1909	St. Clair	0.5	3.5	3.5	3.2									
1910	Buchanan	0.9	-	1.4	2.6									
1911	Perry	-1.6	1.2	2.9	3.0	0.07	0.04	0.01						
1913	Mississippi	-0.2	4.3	3.9	1.9	-	-	0.02						
1914	Ralls	3.6	0.1	2.3	1.7									
2001	Holt	4.3	3.2	4.8	4.8	-	0.95	0.79				-	1.0	1.4
2002	Cape	1.7	4.8	4.8	4.8							-	6.8	4.8
2003	Montgomery	0.3	4.8	4.8	4.8				1.0	1.0				
2004	Warren	2.4	2.9	6.7	6.7							-	57.7	63.7
2005	Franklin	0.1	3.9	4.8	4.8							-	0.6	0.5
2006	Lincoln	12.5	5.4	6.5	6.3							-	34.0	34.1
2007	Audrain	0.6	0.3	4.8	4.8				1.1	1.0				
2008	Dade	0.2	9.0	5.5	4.8									
2009	Scott	1.1	4.8	4.8	4.8							-	0.6	-
2010	Perry	0.4	2.5	1.9	1.9				1.0	1.0				

Year-by-year summary:

Yield Summary

Year	n	Median	Credible Interval (90%)
			- - - Bushels per Acre - - -
All sites	33	1.7	1.2 to 2.2
2018	10	1.7	0.9 to 2.6
2019	12	1.0	0.3 to 1.8
2020	11	2.3	1.5 to 3.0

Scout Summary: Disease rating (0 to 100)

Year	Disease	n	Pre	Post No Spray	Post Spray
2018	Septoria	8/9	3.0	5.2	4.2
	Frogeye	7/9	0	1.0	2.2
2019	Septoria	10/10	1.1	2.5	2.1
	Frogeye	4/10	0.07	0.01	0.01
2020	Septoria	10/10	4.0	4.9	4.8
	Frogeye	1/10	0.1	0.9	0.8
	SDS	6/10	0	16.8	17.4
	Downy	3/10	1.0	1.0	1.0

Conclusions: Yield benefits were greatest in 2020. Across three years the median benefit was over 1.7 bushels per acre. There is a 90% probability the benefit was between 1.2 and 2.2 bushels per acre.