

Purdue Weed Science

University-Restraint Visibility

Trial ID: 21S-MGS-CORN-04 Location: MEIGS Trial Year: 2021
 Protocol ID: 21S-MGS-CORN-04 Investigator (Creator): Dr. Bill Johnson
 Project ID: Study Director: Brent Mansfield
 Sponsor Contact: Chuck Foresman - Summit Agro

General Trial Information
Study Director: Brent Mansfield **Title:** Research Associate
Investigator: Dr. Bill Johnson **Title:** Professor

Trial Status: E established
ARM Trial Created On: 5/24/2021
Initiation Date: 5/24/2021

Trial Location
City: Lafayette **Country:** USA United States
State/Prov.: Indiana
Postal Code: 47907

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Role: STYDIR study director
Study Director: Brent Mansfield **Title:** Research Associate
Organization: Purdue University
Address 1: 915 W. State Street
Country: USA United States **E-mail:** brentmansfield@purdue.edu
City: West Lafayette **State/Prov:** IN **Postal Code:** 47907

Role: INVEST investigator
Investigator: Dr. Bill Johnson **Title:** Professor
Organization: Purdue University
Address 1: 915 W. State Street
Country: USA United States **E-mail:** wgj@purdue.edu
City: West Lafayette **State/Prov:** IN **Postal Code:** 47907

Role: SPONSR sponsor
Sponsor: Chuck Foresman - Summit Agro

Crop Description
Crop 1: C ZEAMX Zea mays corn **Stage Scale:** BBCH **BBCH Scale:** BCOR
Entry Date: 6/22/2021
Variety: DKC 62-52 RIB
Attributes: GLU-R, GLY-R
Planting Date: 5/23/2021 **Planting Rate:** 34000 S/A
Depth: 1.75 IN
Rows per Plot: 4 **Planting Method:** PLANTD planted
Row Spacing: 30 IN **Planting Equipment:** PP plot planter
Soil Temperature: 65 F **Soil Moisture:** NORMAL normal, adequate
Emergence Date: 6/2/2021

Pest Description

Pest 1 Type: W **Code:** AMATA *Amaranthus x tamariscinus* **Entry Date:** 10/27/2021
Common Name: common water hemp **Stage Scale:** BBCH

Pest 2 Type: W **Code:** ABUTH *Abutilon theophrasti* **Entry Date:** 10/27/2021
Common Name: velvetleaf **Stage Scale:** BBCH

Pest 3 Type: W **Code:** SETFA *Setaria faberi* **Entry Date:** 10/27/2021
Common Name: Giant foxtail **Stage Scale:** BBCH

Site and Design
Treated Plot Width: 6.67 FT **Site Type:** FIELD field
Treated Plot Length: 25 FT **Experimental Unit:** 1 PLOT plot
Treated Plot Area: 166.75 FT2 **Treatments:** 5 **Tillage Type:** NOTILL no-till
Replications: 4 **Study Design:** RACOB L Randomized Complete Block (RCB)

Soil Description
Description Name: MEIGS-S3
% Sand: 21 **% OM:** 2.2 **Texture:** SIL silt loam
% Silt: 54 **pH:** 6.8 **Soil Name:** Starks-Fincastle complex
% Clay: 25 **CEC:** 8.3

No.	Date	Moisture Total	Unit	Min Temp	Max Temp	Temp Unit
1.	5/1/2021	0	IN	40	63	F

2.	5/2/2021	0	IN	49	74	F
3.	5/3/2021	0.26	IN	56	78	F
4.	5/4/2021	0.01	IN	55	66	F
5.	5/5/2021	0.04	IN	43	59	F
6.	5/6/2021	0	IN	42	61	F
7.	5/7/2021	0.25	IN	38	58	F
8.	5/8/2021	0	IN	32	63	F
9.	5/9/2021	1.43	IN	40	57	F
10.	5/10/2021	0.37	IN	37	47	F
11.	5/11/2021	0.09	IN	39	59	F
12.	5/12/2021	0	IN	36	61	F
13.	5/13/2021	0	IN	38	60	F
14.	5/14/2021	0	IN	41	66	F
15.	5/15/2021	0	IN	46	70	F
16.	5/16/2021	0	IN	53	71	F
17.	5/17/2021	0.35	IN	55	71	F
18.	5/18/2021	0.12	IN	58	63	F
19.	5/19/2021	0	IN	59	72	F
20.	5/20/2021	0	IN	64	75	F
21.	5/21/2021	0	IN	64	84	F
22.	5/22/2021	0	IN	63	83	F
23.	5/23/2021	0	IN	63	85	F
24.	5/24/2021	0	IN	68	85	F
25.	5/25/2021	0	IN	67	88	F
26.	5/26/2021	0.32	IN	66	87	F
27.	5/27/2021	0.19	IN	58	81	F
28.	5/28/2021	0.08	IN	60	80	F
29.	5/29/2021	0.47	IN	43	61	F
30.	5/30/2021	0	IN	41	63	F
31.	5/31/2021	0	IN	43	71	F
32.	6/1/2021	0	IN	57	71	F
33.	6/2/2021	0.04	IN	58	74	F
34.	6/3/2021	0.03	IN	59	87	F
35.	6/4/2021	0	IN	61	82	F
36.	6/5/2021	0	IN	63	88	F
37.	6/6/2021	0	IN	66	86	F
38.	6/7/2021	0.01	IN	69	83	F
39.	6/8/2021	0.1	IN	69	83	F
40.	6/9/2021	0	IN	70	85	F
41.	6/10/2021	0	IN	67	85	F
42.	6/11/2021	0	IN	69	85	F
43.	6/12/2021	0	IN	67	90	F
44.	6/13/2021	0	IN	69	93	F
45.	6/14/2021	0	IN	63	86	F
46.	6/15/2021	0	IN	57	83	F
47.	6/16/2021	0	IN	53	81	F
48.	6/17/2021	0	IN	53	82	F
49.	6/18/2021	0.01	IN	61	86	F
50.	6/19/2021	0.47	IN	67	93	F
51.	6/20/2021	0	IN	67	81	F
52.	6/21/2021	0.1	IN	70	86	F
53.	6/22/2021	0	IN	49	72	F
54.	6/23/2021	0	IN	54	74	F
55.	6/24/2021	0	IN	60	77	F
56.	6/25/2021	1.19	IN	63	79	F
57.	6/26/2021	0.83	IN	70	81	F
58.	6/27/2021	1.05	IN	69	85	F
59.	6/28/2021	0.11	IN	69	86	F
60.	6/29/2021	0	IN	72	90	F

61.	6/30/2021	0	IN	72	89	F
62.	7/1/2021	0.35	IN	70	78	F
63.	7/2/2021	0	IN	55	82	F
64.	7/3/2021	0	IN	53	75	F
65.	7/4/2021	0	IN	57	78	F
66.	7/5/2021	0	IN	67	85	F
67.	7/6/2021	0	IN	68	86	F
68.	7/7/2021	0	IN	71	86	F
69.	7/8/2021	1.29	IN	67	86	F
70.	7/9/2021	0.05	IN	59	80	F
71.	7/10/2021	0.03	IN	61	73	F
72.	7/11/2021	0.1	IN	65	76	F
73.	7/12/2021	1.3	IN	66	76	F
74.	7/13/2021	0.4	IN	67	82	F
75.	7/14/2021	0.08	IN	65	79	F
76.	7/15/2021	0	IN	66	82	F
77.	7/16/2021	0.16	IN	69	86	F
78.	7/17/2021	0.1	IN	66	78	F
79.	7/18/2021	0.01	IN	66	80	F
80.	7/19/2021	0	IN	61	83	F
81.	7/20/2021	0	IN	61	82	F
82.	7/21/2021	0	IN	64	83	F
83.	7/22/2021	0	IN	64	79	F
84.	7/23/2021	0	IN	67	83	F
85.	7/24/2021	0	IN	71	86	F
86.	7/25/2021	0	IN	69	87	F
87.	7/26/2021	0	IN	65	88	F
88.	7/27/2021	0	IN	62	87	F
89.	7/28/2021	0	IN	66	86	F
90.	7/29/2021	0	IN	70	87	F
91.	7/30/2021	0	IN	65	88	F
92.	7/31/2021	0	IN	62	78	F

Application Description

	A	B
Application Date	5/24/2021	6/29/2021
Appl. Start Time	11:07 AM	12:38 PM
Appl. Stop Time	11:20 AM	12:49 PM
Interval to Prev. Appl.		36 DAYS
Application Method	SPRAY	SPRAY
Application Timing	PREPRE	POSPOS
Application Placement	BROSOI	BROFOL
Applied By	C. BLAND	B. MANSFIELD
Appl. Entry Date	6/22/2021	10/27/2021
Air Temperature Start, Stop	83, 83 F	90, 90 F
% Relative Humidity Start, Stop	48, 48	59, 59
Wind Velocity+Dir. Start	1.5 MPH, W	4 MPH, SW
Wet Leaves (Y/N)	N, no	N, no
Soil Temperature	74 F	82 F
Soil Moisture	NORMAL	NORMAL
% Cloud Cover	20	50

Crop Stage At Each Application		
	A	B
Crop 1 Code, BBCH Scale	ZEAMX, BCOR	ZEAMX, BCOR
Days after Emergence	-9	27
Stage Majority, Percent	00, -	14, -
Stage Minimum, Percent	00, -	13, -
Stage Maximum, Percent	00, -	15, -
Height Average	0 IN	12 IN
Height Minimum, Maximum		10, 13

Pest Stage At Each Application		
	A	B
Pest 1 Code, Type, Scale	AMATA, W, BBCH	AMATA, W, BBCH
Stage Majority, Percent	00, -	12, -
Stage Minimum, Percent	00, -	11, -
Stage Maximum, Percent	00, -	13, -
Height Average	0 IN	0.5 IN
Density Average	0 FT2	0.25 FT2
Pest 2 Code, Type, Scale	ABUTH, W, BBCH	ABUTH, W, BBCH
Stage Majority, Percent	00, -	00, -
Stage Minimum, Percent	00, -	00, -
Stage Maximum, Percent	00, -	00, -
Height Average	0 IN	0 IN
Density Average	0 FT2	0 FT2
Pest 3 Code, Type, Scale	SETFA, W, BBCH	SETFA, W, BBCH
Stage Majority, Percent	00, -	00, -
Stage Minimum, Percent	00, -	00, -
Stage Maximum, Percent	00, -	00, -
Height Average	0 IN	0 IN
Density Average	0 FT2	0 FT2

Application Equipment		
	A	B
Appl. Equipment	CO2 BACKPACK	CO2 BACKPACK
Equipment Type	BACSPR	BACSPR
Operation Pressure	24 PSI	38 PSI
Nozzle Model	XR	TT
Nozzle Type	FLAFXR	TEEJTU
Nozzle TradeName	TEEJET	TEEJET
Nozzle Tip Size, Color	8002, YELLOW	110015, GREEN
Nozzle Spacing	20 IN	20 IN
Nozzles/Row	4	4
Boom Length	6.67 FT	6.67 FT
Boom Height	17 IN	24.0 IN
Ground Speed	3 MPH	3 MPH
Carrier	WATER	WATER
Application Amount	15 GAL/AC	15 GAL/AC
Mix Size	945.0 mL	945.0 mL
Propellant	COMCO2	COMCO2

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Protocol ID: 21S-MGS-CORN-04		Investigator (Creator): Dr. Bill Johnson			
Project ID:		Study Director: Brent Mansfield			
Sponsor Contact: Chuck Foresman - Summit Agro					

Pest Type					W, Weed AMATA Amaranthus x ta> common water he>	W, Weed ABUTH Abutilon theoph> velvetleaf	W, Weed SETFA Setaria faberi Giant foxtail		
Pest Code									
Pest Scientific Name									
Pest Name									
Crop Type, Code	C, ZEAMX	C, ZEAMX	C, ZEAMX	C, ZEAMX					
BBCH Scale	BCOR	BCOR	BCOR	BCOR					
Crop Scientific Name	Zea mays	Zea mays	Zea mays	Zea mays					
Crop Name	Corn	Corn	Corn	Corn					
Rating Date	5/31/2021	6/7/2021	7/6/2021	7/13/2021	5/31/2021	5/31/2021	5/31/2021		
Part Rated					- C				
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN	CONTRO	CONTRO	CONTRO		
Rating Unit/Min/Max	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100	% , 0, 100		
Number of Subsamples	1	1	1	1	1	1	1		
Data Entry Date	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021		
Rating Timing	7 DA-A	14 DA-A	7 DA-B	14 DA-B	7 DA-A	7 DA-A	7 DA-A		
Days After First/Last Applic.	7, 7	14, 14	43, 7	50, 14	7, 7	7, 7	7, 7		
Plant-Eval Interval	8 DP-1	15 DP-1	44 DP-1	51 DP-1	8 DP-1	8 DP-1	8 DP-1		
Days After Emergence	-2 DE-1	5 DE-1	34 DE-1	41 DE-1	-2 DE-1	-2 DE-1	-2 DE-1		
Trt Treatment No. Name	Rate Unit	Appl Code	1	2	3	4	5	6	7
1 NONTREATED			0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 RESTRAINT	36 FL OZ/A A		0.3 -	0.0 -	1.5 -	0.0 -	100.0 -	100.0 -	100.0 -
AATREX	1 QT/A A								
SHIELDDEX	1 FL OZ/A B								
AATREX	1 QT/A B								
PRIME OIL	1 % V/V B								
AMSOL	2.5 % V/V B								
3 RESTRAINT	18 FL OZ/A A		0.0 -	0.0 -	0.5 -	0.0 -	100.0 -	100.0 -	100.0 -
AATREX	1 QT/A A								
RESTRAINT	18 FL OZ/A B								
AATREX	1 QT/A B								
PRIME OIL	1 % V/V B								
AMSOL	2.5 % V/V B								
4 RESICORE	40 FL OZ/A A		1.3 -	0.3 -	1.3 -	0.0 -	100.0 -	100.0 -	100.0 -
AATREX	1 QT/A A								
RESTRAINT	30 FL OZ/A B								
AATREX	1 QT/A B								
PRIME OIL	1 % V/V B								
AMSOL	2.5 % V/V B								
5 RESICORE	40 FL OZ/A A		1.8 -	0.3 -	1.0 -	0.0 -	100.0 -	100.0 -	100.0 -
AATREX	1 QT/A A								
RESICORE	40 FL OZ/A B								
AATREX	1 QT/A B								
PRIME OIL	1 % V/V B								
AMSOL	2.5 % V/V B								
LSD P= .05			1.81	0.60	1.14	.	.	.	.
Standard Deviation			1.13	0.37	0.71	0.00	0.00	0.00	0.00
CV			139.5	298.14	67.01	0.0	0.0	0.0	0.0
Grand Mean			0.81	0.13	1.06	0.00	100.00	100.00	100.00
Levene's F^			3.094	0.333	0.296	.	.	.	.
Levene's Prob(F)			0.068	0.802	0.827	.	.	.	.
Rank X2			.	.	.	.	.	.	.
P(Rank X2)			.	.	.	.	.	.	.
Skewness^			-0.1953	1.1877*	0.0639	.	.	.	.
Kurtosis^			0.7358	1.2791	-0.5977	.	.	.	.
Replicate F			0.178	0.600	10.644	0.000	0.000	0.000	0.000
Replicate Prob(F)			0.9084	0.6310	0.0026	1.0000	1.0000	1.0000	1.0000
Treatment F			2.124	0.600	1.438	0.000	0.000	0.000	0.000
Treatment Prob(F)			0.1673	0.6310	0.2950	1.0000	1.0000	1.0000	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
 Untreated treatment(s) 1 excluded from analysis.
 Could not calculate LSD (% mean diff) for columns 4,5,6,7,8,9,10,12,13,14,15 because error mean square = 0.
 ^Calculated from residual.

Pest Type	W, Weed	W, Weed	W, Weed	W, Weed	W, Weed	W, Weed
Pest Code	AMATA	ABUTH	SETFA	AMATA	ABUTH	SETFA
Pest Scientific Name	Amaranthus x ta>	Abutilon theoph>	Setaria faberi	Amaranthus x ta>	Abutilon theoph>	Setaria faberi
Pest Name	common water he>	velvetleaf	Giant foxtail	common water he>	velvetleaf	Giant foxtail
Crop Type, Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Rating Date	6/7/2021	6/7/2021	6/7/2021	6/29/2021	6/29/2021	6/29/2021
Part Rated	-, C			-, C		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100	%, 0, 100
Number of Subsamples	1	1	1	1	1	1
Data Entry Date	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021	10/27/2021
Rating Timing	14 DA-A	14 DA-A	14 DA-A	0 DA-B	0 DA-B	0 DA-B
Days After First/Last Applic.	14, 14	14, 14	14, 14	36, 36	36, 36	36, 36
Plant-Eval Interval	15 DP-1	15 DP-1	15 DP-1	37 DP-1	37 DP-1	37 DP-1
Days After Emergence	5 DE-1	5 DE-1	5 DE-1	27 DE-1	27 DE-1	27 DE-1
Trt Treatment	8	9	10	11	12	13
No. Name						
Rate						
Unit						
Appl Code						
1 NONTREATED	0.0	0.0	0.0	0.0	0.0	0.0
2 RESTRAINT	100.0 -	100.0 -	100.0 -	98.5 -	100.0 -	100.0 -
AATREX	1 QT/A					
SHIELDEX	1 FL OZ/A					
AATREX	1 QT/A					
PRIME OIL	1 % V/V					
AMSOL	2.5 % V/V					
3 RESTRAINT	100.0 -	100.0 -	100.0 -	98.5 -	100.0 -	100.0 -
AATREX	1 QT/A					
RESTRAINT	18 FL OZ/A					
AATREX	1 QT/A					
PRIME OIL	1 % V/V					
AMSOL	2.5 % V/V					
4 RESICORE	100.0 -	100.0 -	100.0 -	98.5 -	100.0 -	100.0 -
AATREX	1 QT/A					
RESTRAINT	30 FL OZ/A					
AATREX	1 QT/A					
PRIME OIL	1 % V/V					
AMSOL	2.5 % V/V					
5 RESICORE	100.0 -	100.0 -	100.0 -	97.8 -	100.0 -	100.0 -
AATREX	1 QT/A					
RESICORE	40 FL OZ/A					
AATREX	1 QT/A					
PRIME OIL	1 % V/V					
AMSOL	2.5 % V/V					
LSD P= .05	.	.	.	2.80	.	.
Standard Deviation	0.00	0.00	0.00	1.75	0.00	0.00
CV	0.0	0.0	0.0	1.78	0.0	0.0
Grand Mean	100.00	100.00	100.00	98.31	100.00	100.00
Levene's F^	.	.	.	2.222	.	.
Levene's Prob(F)	.	.	.	0.138	.	.
Rank X2	.	.	.	.	.	.
P(Rank X2)	.	.	.	.	.	.
Skewness^	.	.	.	0.0387	.	.
Kurtosis^	.	.	.	-0.9772	.	.
Replicate F	0.000	0.000	0.000	0.673	0.000	0.000
Replicate Prob(F)	1.0000	1.0000	1.0000	0.5896	1.0000	1.0000
Treatment F	0.000	0.000	0.000	0.184	0.000	0.000
Treatment Prob(F)	1.0000	1.0000	1.0000	0.9048	1.0000	1.0000

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Untreated treatment(s) 1 excluded from analysis.
Could not calculate LSD (% mean diff) for columns 4,5,6,7,8,9,10,12,13,14,15 because error mean square = 0.
^Calculated from residual.

Pest Type	W, Weed	W, Weed
Pest Code	AMATA	AMATA
Pest Scientific Name	Amaranthus x ta>	Amaranthus x ta>
Pest Name	common water he>	common water he>
Crop Type, Code		
BBCH Scale		
Crop Scientific Name		
Crop Name		
Rating Date	7/13/2021	7/27/2021
Part Rated	-, C	-, C
Rating Type	CONTRO	CONTRO
Rating Unit/Min/Max	%, 0, 100	%, 0, 100
Number of Subsamples	1	1
Data Entry Date	10/27/2021	10/27/2021
Rating Timing	14 DA-B	28 DA-B
Days After First/Last Applic.	50, 14	64, 28
Plant-Eval Interval	51 DP-1	65 DP-1
Days After Emergence	41 DE-1	55 DE-1
Trt Treatment	14	15
No. Name		
Rate Unit		
Appl Code		
1 NONTREATED	0.0	0.0
2 RESTRAINT	36 FL OZ/A A	100.0 -
AATREX	1 QT/A A	
SHIELDDEX	1 FL OZ/A B	
AATREX	1 QT/A B	
PRIME OIL	1 % V/V B	
AMSOL	2.5 % V/V B	
3 RESTRAINT	18 FL OZ/A A	100.0 -
AATREX	1 QT/A A	
RESTRAINT	18 FL OZ/A B	
AATREX	1 QT/A B	
PRIME OIL	1 % V/V B	
AMSOL	2.5 % V/V B	
4 RESICORE	40 FL OZ/A A	100.0 -
AATREX	1 QT/A A	
RESTRAINT	30 FL OZ/A B	
AATREX	1 QT/A B	
PRIME OIL	1 % V/V B	
AMSOL	2.5 % V/V B	
5 RESICORE	40 FL OZ/A A	100.0 -
AATREX	1 QT/A A	
RESICORE	40 FL OZ/A B	
AATREX	1 QT/A B	
PRIME OIL	1 % V/V B	
AMSOL	2.5 % V/V B	
LSD P=.05	.	.
Standard Deviation	0.00	0.00
CV	0.0	0.0
Grand Mean	100.00	100.00
Levene's F^	.	.
Levene's Prob(F)	.	.
Rank X2	.	.
P(Rank X2)	.	.
Skewness^	.	.
Kurtosis^	.	.
Replicate F	0.000	0.000
Replicate Prob(F)	1.0000	1.0000
Treatment F	0.000	0.000
Treatment Prob(F)	1.0000	1.0000

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

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Untreated treatment(s) 1 excluded from analysis.

Could not calculate LSD (% mean diff) for columns 4,5,6,7,8,9,10,12,13,14,15 because error mean square = 0.

^Calculated from residual.

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University-Restraint Visibility		
Trial ID: 21S-MGS-CORN-04	Location: MEIGS	Trial Year: 2021
Protocol ID: 21S-MGS-CORN-04	Investigator (Creator): Dr. Bill Johnson	
Project ID:	Study Director: Brent Mansfield	
Sponsor Contact: Chuck Foresman - Summit Agro		

<p>Pest Type W, Weed = Weed or volunteer crop</p> <p>Pest Code AMATA, Amaranthus x tamariscinus, common water hemp = US ABUTH, Abutilon theophrasti, velvetleaf = US SETFA, Setaria faberi, Giant foxtail = US</p> <p>Crop Type, Code C = EPP0 species (Bayer) codes ZEAMX, BCOR, Zea mays, Corn = US</p> <p>C = Crop is Part Rated</p> <p>Rating Type PHYGEN = phytotoxicity - general / injury CONTRO = control / burndown or knockdown</p> <p>Rating Unit/Min/Max %, 0, 100 = percent</p> <p>Plant-Eval Interval 8 DP-1 = 1 ZEAMX 5/23/2021 15 DP-1 = 1 ZEAMX 5/23/2021 44 DP-1 = 1 ZEAMX 5/23/2021 51 DP-1 = 1 ZEAMX 5/23/2021 37 DP-1 = 1 ZEAMX 5/23/2021 65 DP-1 = 1 ZEAMX 5/23/2021</p>
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