

The Effect of Cumulative Stresses on Corn Yield.

Project Code: 05-WF-SE-N100 Location: Belleville Research Center
Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
Trial Status: Final Updated: 12-02-05

Objective:

Determine the influence of cumulative stress such as glyphosate drift and postemergence herbicides on corn injury and yield.

Weed Code Common Name Scientific Name
1. NA crop tolerance only

Crop 1: ZEAMX corn, field Variety: 33P66
Planting Method: Seeded Planting Date: 5-7-05
Rate: 28000 S/A Depth: 1.5 IN
Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 28 FT Reps: 4
Tillage Type: Reduced-Till Study Design: Randomized complete block
Previous Crop, Year: GLXMA, 2004

Field Prep./Maintenance: N 150 LB/A, P205 100 LB/A, K20 200 LB/A

Soil Name: Ebbert % OM: 2.1 pH: 5.6 CEC: 10
Texture: Silt loam Fert. Level: P1: 54 LB/A, K: 316 LB/A

APPLICATION DESCRIPTION

	A	B
Application Date:	05-31-05	06-03-05
Time of Day:	12:30	9:45
Application Method:	Spray	Spray
Application Timing:	V4-V5	3-4DA-A
Applic. Placement:	BROFOL	BROFOL
Air Temp., Unit:	80 F	80 F
% Relative Humidity:	30	50
Wind Velocity, Unit:	8 MPH	2 MPH
Soil Moisture:	BELNOR	BELNOR

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	ZEAMX V4-V5	ZEAMX V5
Height, Unit:	8 IN	9 IN

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan
Nozzle Size:	8002	8002
Boom Length, Unit:	7.5 FT	7.5 FT
Spray Volume, Unit:	20 GPA	20 GPA

NOTES:

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Weed Code		Crop Code		Rating Data Type		Rating Unit		Rating Date		Trt-Eval Interval		ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	
												Moisture	Yield	Injury	Injury	Injury	Injury	Height	Plants
												Percent	bu/A	Percent	Percent	Percent	Percent	Inches	000/acre
												10-13-05	10-13-05	06-10-05	06-17-05	07-01-05	07-29-05	07-01-05	07-01-05
														7 DA-B	14 DA-B	28 DA-B	56 DA-B	28 DA-B	28 DA-B
Trt	Treatment	Form	Form	Rate	Rate	Prod	Prod	Grow	Appl										
No.	Name	Conc	Type	Unit	Unit	Rate	Unit	Stg	Code										
1	HANDWEED									15.5	185	0	0	0	0	0	72	29.0	
2	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	15.9	185	0	0	0	0	0	74	29.6	
3	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	15.4	201	1	0	0	0	0	80	29.5	
4	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	16.2	182	6	0	0	0	0	69	28.0	
5	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	15.6	137	56	46	23	15	67	29.3		
6	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	15.8	180	10	4	4	0	69	28.8		
6	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B										
6	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B										
6	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B										
6	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B										
7	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	15.5	182	11	0	0	0	71	28.9		
7	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B										
7	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B										
7	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B										
7	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B										
8	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	15.5	182	4	0	0	0	74	29.0		
8	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B										
8	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B										
8	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B										
8	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B										
8	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B										
9	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	15.7	200	7	0	0	0	77	28.8		
9	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B										
9	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B										
9	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B										
9	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B										
9	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B										
10	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	15.7	177	16	4	3	0	71	29.3		
10	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B										
10	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B										
10	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B										
10	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B										
10	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B										
11	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	15.3	133	63	53	31	19	65	27.6		
11	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B										
11	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B										
11	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B										
11	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B										
11	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B										
12	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	15.6	191	11	0	1	0	70	28.6		
12	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B										
12	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B										
12	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B										
12	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B										
12	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B										
13	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	15.6	184	16	0	1	0	64	28.2		
13	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B										
13	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B										
13	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B										
13	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B										
13	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B										
14	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	15.1	173	18	6	5	0	65	28.6		
14	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B										
14	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B										
14	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B										
14	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B										
14	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B										

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Weed Code		Crop Code		Rating Data Type		Rating Unit		Rating Date		Trt-Eval Interval		ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	
												Moisture	Yield	Injury	Injury	Injury	Injury	Height	Plants
												Percent	bu/A	Percent	Percent	Percent	Percent	Inches	000/acre
												10-13-05	10-13-05	06-10-05	06-17-05	07-01-05	07-29-05	07-01-05	07-01-05
														7 DA-B	14 DA-B	28 DA-B	56 DA-B	28 DA-B	28 DA-B
Trt	Treatment	Form	Form	Rate	Rate	Prod	Prod	Grow	Appl										
No.	Name	Conc	Type	Unit	Unit	Rate	Unit	Stg	Code										
15	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	15.1	122	65	58	38	29	68	28.3		
15	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B										
15	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B										
15	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B										
15	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B										
15	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B										
LSD (P=.05)										0.57	24.8	7.2	5.6	5.4	5.8	10.6	1.81		
Replicate F										1.910	0.959	0.974	0.651	1.167	1.128	8.369	4.282		
Replicate Prob(F)										0.1426	0.4211	0.4139	0.5867	0.3338	0.3486	0.0002	0.0100		
Treatment F										1.923	7.641	80.987	117.992	44.050	20.092	1.478	0.840		
Treatment Prob(F)										0.0516	0.0001	0.0001	0.0001	0.0001	0.0001	0.1618	0.6241		

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Weed Code	
Crop Code	ZEAMX
Rating Data Type	Dry wt.
Rating Unit	g/Plant
Rating Date	07-15-05
Trt-Eval Interval	42 DA-B

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	
1	HANDWEED									131
2	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	135
3	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	145
4	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	128
5	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	111
6	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	142
6	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B	
6	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B	
6	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B	
6	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B	
7	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	123
7	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B	
7	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B	
7	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B	
7	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B	
8	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	117
8	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	
8	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B	
8	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B	
8	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B	
8	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B	
9	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	157
9	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	
9	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B	
9	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B	
9	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B	
9	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B	
10	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	130
10	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	
10	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B	
10	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B	
10	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B	
10	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B	
11	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	86
11	ACCENT	75	WG	0.01115	lb ai/a	0.238	oz/a	3-4DA-A	B	
11	MATRIX	25	WG	0.01115	lb ai/a	0.714	oz/a	3-4DA-A	B	
11	DISTINCT	70	WG	0.178	lb ai/a	4.07	oz/a	3-4DA-A	B	
11	ACTIVATOR 90	100	LIQ	0.25	% v/v	0.25	% v/v	3-4DA-A	B	
11	28% UAN	100	LIQ	1.25	% v/v	1.25	% v/v	3-4DA-A	B	
12	ROUNDUP W-MAX	4.5	SL	0.0089	lb ae/a	0.253	fl oz/a	V4-V5	A	128
12	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	
12	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B	
12	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B	
12	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B	
12	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B	
13	ROUNDUP W-MAX	4.5	SL	0.0446	lb ae/a	1.27	fl oz/a	V4-V5	A	134
13	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	
13	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B	
13	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B	
13	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B	
13	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B	
14	ROUNDUP W-MAX	4.5	SL	0.089	lb ae/a	2.53	fl oz/a	V4-V5	A	137
14	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	
14	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B	
14	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B	
14	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B	
14	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B	

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Weed Code	
Crop Code	ZEAMX
Rating Data Type	Dry wt.
Rating Unit	g/Plant
Rating Date	07-15-05
Trt-Eval Interval	42 DA-B

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	
15	ROUNDUP W-MAX	4.5	SL	0.178	lb ae/a	5.06	fl oz/a	V4-V5	A	93
15	OPTION	35	WG	0.0312	lb ai/a	1.43	oz/a	3-4DA-A	B	
15	BUCTRIL	2	EC	0.25	lb ai/a	1	pt/a	3-4DA-A	B	
15	AATREX	90	WG	0.89	lb ai/a	1	lb/a	3-4DA-A	B	
15	DESTINY MSO	100	LIQ	1.5	pt/a	1.5	pt/a	3-4DA-A	B	
15	28% UAN	100	LIQ	2.13	pt/a	2.13	pt/a	3-4DA-A	B	
LSD (P=.05)										37.2
Replicate F										6.381
Replicate Prob(F)										0.0012
Treatment F										2.087
Treatment Prob(F)										0.0334

Trial Comments

1. Protocol: Univ. of Guelph.
2. Ratings: CI 7, 14, 28 and 56 DA "B"; stand counts 28 DA "B"; dry weight 42 DA "B" (one meter of row).
3. Grain moisture and yield.
4. Blanket application of Lexar (3 qt/A) over entire study, applied PRE on 5-7-05.
5. Keep entire study weedfree.
6. Dry wt. = Oven dry weight. ZEAMX oven dry weight is average of 6 plants per plot.
7. Harvested 10-13-05, (2) 30 inch rows by 25 ft, bu/A has been adjusted to 15.5 % moisture.