

# Miscellaneous, Including Alfalfa, Non-crop, and Auxin Tolerance

Southern Illinois University

Warrant in Alfalfa.

Trial ID: 15-23E-N130 Location: Belleville Res. Center Trial Year: 2015  
Investigator: Ronald F. Krausz

<b>Trial Status:</b> F one-year/final <b>Initiation Date:</b> 5-1-15 <b>Completion Date:</b> 9-7-15	<b>Trial Location</b>
<b>City:</b> Belleville <b>Country:</b> USA <b>State/Prov.:</b> Illinois IL <b>Postal Code:</b> 62221	

<b>Objectives:</b> Evaluate crop safety from PRE and POST applications of Warrant in alfalfa.
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<b>Study Director:</b> Ronald F. Krausz <b>Organization:</b> Belleville Research Center - Southern Illinois Univ Carbondale <b>Address:</b> 2036 Charles Lane <b>City+State/Prov:</b> Belleville, IL <b>Postal Code:</b> 62221 <b>Country:</b> USA	<b>Contacts</b> <b>Title:</b> Researcher/Farm Manager <b>Phone No.:</b> 618-566-4761 <b>E-mail:</b> rkrausz@siu.edu
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<b>Crop 1:</b> MEDSA Medicago sativa <b>Variety:</b> DKA44-16RR <b>Description:</b> New Seeding Alfalfa <b>Planting Rate, Unit:</b> 18 LB/A <b>Depth, Unit:</b> 0.25 IN	<b>Crop Description</b> Alfalfa <b>BBCH Scale:</b> BDIC <b>Planting Date:</b> 5-1-15 <b>Planting Method:</b> SEEDED
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<b>Pest 1 Type:</b> W <b>Code:</b> NA <b>Common Name:</b> crop tolerance only	<b>Pest Description</b>
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<b>Treated Plot Width:</b> 10 FT <b>Treated Plot Length:</b> 30 FT	<b>Total Plot Width:</b> 10 FT <b>Total Plot Length:</b> 30 FT	<b>Site and Design</b> <b>Site Type:</b> FIELD <b>Experimental Unit:</b> 1 PLOT <b>Tillage Type:</b> REDTIL reduced-till <b>Study Design:</b> RACOBL Randomized Complete Block (RCB)						
<b>Replications:</b> 3 <b>Untreated Arrangement:</b> INCLUDED single control randomized in each block								
<table border="1"><thead><tr><th>No.</th><th>Previous Crop</th><th>Year</th></tr></thead><tbody><tr><td>1.</td><td>ZEAMD</td><td>2014</td></tr></tbody></table>	No.	Previous Crop	Year	1.	ZEAMD	2014		
No.	Previous Crop	Year						
1.	ZEAMD	2014						

<b>Maintenance</b>					
<table border="1"><thead><tr><th>No.</th><th>Maintenance Product Name</th></tr></thead><tbody><tr><td>1.</td><td>N 0 LB/A, P2O5 50 LB/A, K2O 150 LB/A</td></tr></tbody></table>	No.	Maintenance Product Name	1.	N 0 LB/A, P2O5 50 LB/A, K2O 150 LB/A	
No.	Maintenance Product Name				
1.	N 0 LB/A, P2O5 50 LB/A, K2O 150 LB/A				

<b>Description Name:</b> 23E_2013 <b>% OM:</b> 2.3 <b>pH:</b> 5.8 <b>CEC:</b> 6	<b>Soil Description</b> <b>Texture:</b> SIL silt loam <b>Soil Name:</b> Winfield									
<b>Additional Measured Elements</b>										
<table border="1"><thead><tr><th>Element</th><th>Quantity</th><th>Unit</th></tr></thead><tbody><tr><td>P1</td><td>56</td><td>lb/A</td></tr><tr><td>K</td><td>302</td><td>lb/A</td></tr></tbody></table>	Element	Quantity	Unit	P1	56	lb/A	K	302	lb/A	
Element	Quantity	Unit								
P1	56	lb/A								
K	302	lb/A								

<b>Overall Moisture Conditions:</b> ABONOR <b>Closest Weather Station:</b> ICN - Belleville IL	<b>Moisture and Weather Conditions</b> <b>Distance, Unit:</b> 0.5 MI
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No.	Date	Amount	Unit	Type	Type Description	Interval	Unit	Min Temp	Max Temp	Temp Unit
1.	4-1-15					7	DAY	33	76	F
2.	4-2-15	0.84	IN	RAIN	rain	2	DAY			
3.	4-6-15	0.95	IN	RAIN	rain	4	DAY			
4.	4-8-15					7	DAY	43	78	F
5.	4-13-15	1.02	IN	RAIN	rain	1	DAY			
6.	4-15-15					7	DAY	42	79	F
7.	4-19-15	0.42	IN	RAIN	rain	1	DAY			
8.	4-22-15					7	DAY	36	77	F
9.	4-25-15	0.35	IN	RAIN	rain	1	DAY			
10.	4-29-15					7	DAY	36	84	F
11.	5-6-15					7	DAY	49	85	F
12.	5-8-15	4.09	IN	RAIN	rain	4	DAY			
13.	5-13-15					7	DAY	45	83	F
14.	5-14-15	0.33	IN	RAIN	rain	4	DAY			
15.	5-20-15					7	DAY	44	85	F
16.	5-20-15	0.16	IN	RAIN	rain	1	DAY			
17.	5-24-15	0.89	IN	RAIN	rain	1	DAY			
18.	5-26-15	0.59	IN	RAIN	rain	2	DAY			
19.	5-27-15					7	DAY	55	84	F
20.	5-29-15	2.15	IN	RAIN	rain	2	DAY			
21.	6-3-15					7	DAY	53	89	F
22.	6-5-15	0.17	IN	RAIN	rain	1	DAY			
23.	6-8-15	0.66	IN	RAIN	rain	1	DAY			
24.	6-10-15					7	DAY	64	91	F
25.	6-14-15	0.16	IN	RAIN	rain	1	DAY			
26.	6-15-15	0.11	IN	RAIN	rain	1	DAY			
27.	6-16-15	2.25	IN	RAIN	rain	1	DAY			
28.	6-17-15					7	DAY	69	91	F
29.	6-17-15	0.09	IN	RAIN	rain	1	DAY			
30.	6-18-15	0.14	IN	RAIN	rain	1	DAY			
31.	6-19-15	3.29	IN	RAIN	rain	1	DAY			
32.	6-20-15	0.2	IN	RAIN	rain	2	DAY			
33.	6-24-15					7	DAY	62	93	F
34.	6-25-15	1.66	IN	RAIN	rain	2	DAY			
35.	6-28-15	0.6	IN	RAIN	rain	2	DAY			
36.	7-1-15					7	DAY	63	88	F
37.	7-1-15	0.64	IN	RAIN	rain	2	DAY			
38.	7-7-15	1.33	IN	RAIN	rain	2	DAY			
39.	7-10-15	0.26	IN	RAIN	rain	1	DAY			
40.	7-15-15					7	DAY	69	93	F
41.	7-19-15	0.35	IN	RAIN	rain	2	DAY			
42.	7-22-15					7	DAY	65	95	F
43.	7-26-15	1.21	IN	RAIN	rain	3	DAY			
44.	7-29-15					7	DAY	65	93	F
45.	8-5-15					7	DAY	64	88	F
46.	8-5-15	2.25	IN	RAIN	rain	1	DAY			
47.	8-9-15	0.47	IN	RAIN	rain	1	DAY			
48.	8-12-15					7	DAY	63	89	F
49.	8-18-15	2.23	IN	RAIN	rain	2	DAY			
50.	8-19-15					7	DAY	52	82	F
51.	8-22-15	0.18	IN	RAIN	rain	1	DAY			
52.	8-26-15					7	DAY	54	91	F
53.	9-2-15					7	DAY	68	94	F
54.	9-8-15	1.93	IN	RAIN	rain	2	DAY			

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**Application Description**

	A	B	C	D	E
<b>Application Date:</b>	5-2-15	6-8-15	7-16-15		
<b>Appl. Start Time:</b>	12:00	13:30	8:40		
<b>Appl. Stop Time:</b>	12:30	14:00	8:50		
<b>Application Method:</b>	Spray	Spray	Spray	Spray	Spray
<b>Application Timing:</b>	PRE	EPOST	LPOST	ASNEED1	ASNEED2
<b>Application Placement:</b>	BROSOL	BROFOL	BROFOL	BROFOL	BROFOL
<b>Applied By:</b>	RFK	MEJ	MEJ	Not applied	Not applied
<b>Air Temperature, Unit:</b>	75 F	70 F	74 F		
<b>% Relative Humidity:</b>	34	100	88		
<b>Wind Velocity, Unit:</b>	4 MPH	7 MPH	4 MPH		
<b>Wind Direction:</b>	S	N	S		
<b>Dew Presence (Y/N):</b>	N	N	N		
<b>Soil Temperature, Unit:</b>	57 F	73 F	80 F		
<b>Soil Moisture:</b>	NORMAL	NORMAL	NORMAL		
<b>% Cloud Cover:</b>	0	45	0		
<b>Next Moisture Occurred On:</b>	5-8-15	6-14-15	7-18-15		
<b>Time to Next Moisture, Unit:</b>	6 DAY	6 DAY	2 DAY		

**Crop Stage At Each Application**

	A	B	C	D	E
<b>Crop 1 Code, BBCH Scale:</b>	MEDSA	MEDSA	MEDSA	MEDSA	MEDSA
<b>Stage Scale Used:</b>	DESC	DESC	DESC	DESC	DESC
<b>Stage Majority, Percent:</b>	NA	V6	V16	NA	NA
<b>Stage Minimum, Percent:</b>		V3	V12		
<b>Stage Maximum, Percent:</b>		V6	V16		
<b>Height, Unit:</b>		15 IN	11 IN		
<b>Height Minimum, Maximum:</b>		10 15	6 11		

**Pest Stage At Each Application**

	A	B	C	D	E
<b>Pest 1 Code, Type, Scale:</b>	NA W	NA W	NA W	NA W	NA W
<b>Stage Majority, Percent:</b>	NA	NA	NA	NA	NA

**Application Equipment**

	A	B	C	D	E
<b>Appl. Equipment:</b>	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
<b>Equipment Type:</b>	BACSPR	BACSPR	BACSPR	BACSPR	BACSPR
<b>Operation Pressure, Unit:</b>	30 PSI	30 PSI	30 PSI	30 PSI	30 PSI
<b>Nozzle Type:</b>	XR	XR	XR	XR	XR
<b>Nozzle Size:</b>	8002	8002	8002	8002	8002
<b>Boom Length, Unit:</b>	10 FT	10 FT	10 FT	10 FT	10 FT
<b>Spray Volume, Unit:</b>	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA

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Pest Code	Crop Code	Rating Date	Rating Type	Rating Unit	Rating Timing	Trt-Eval Interval	MEDSA 7-6-15 Yield dw t/A Cutting 1 28 DA-B	MEDSA 8-7-15 Yield dw t/A Cutting 2 22 DA-C	MEDSA 9-7-15 Yield dw t/A Cutting 3	MEDSA 9-7-15 Total Yield dw t/A Cuttings 1-3	MEDSA 9-7-15 Total Yield PERCON Cuttings 1-3			
Trt No.	Treatment Name	Form Conc	Form Type	Form Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code					
1	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B	0.84 a	1.02 a	0.75 a	2.62 a	2.62 a
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					(99.8%)
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
2	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	PRE	A	0.75 a	1.02 a	0.77 a	2.55 a	2.55 a
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B					(97.0%)
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
3	WARRANT	3	CS	2.25	lb ai/a	6	pt/a	PRE	A	0.64 a	1.00 a	0.69 a	2.33 a	2.33 a
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B					(88.6%)
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
4	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B	0.76 a	1.02 a	0.76 a	2.53 a	2.53 a
	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	EPOST	B					(96.5%)
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
5	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B	0.77 a	0.96 a	0.76 a	2.49 a	2.49 a
	WARRANT	3	CS	2.25	lb ai/a	6	pt/a	EPOST	B					(94.9%)
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
6	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B	0.77 a	1.02 a	0.77 a	2.55 a	2.55 a
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					(97.2%)
	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	LPOST	C					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	LPOST	C					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	LPOST	C					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED2	E					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED2	E					
7	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	EPOST	B	0.77 a	1.01 a	0.77 a	2.55 a	2.55 a
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	EPOST	B					(97.3%)
	WARRANT	3	CS	2.25	lb ai/a	6	pt/a	LPOST	C					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	LPOST	C					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	LPOST	C					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED2	E					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED2	E					
8	SELECT MAX	0.97	EC	0.091	lb ai/a	12	fl oz/a	EPOST	B	0.76 a	0.96 a	0.66 a	2.37 a	2.37 a
	RAPTOR	1	SL	0.047	lb ai/a	6	fl oz/a	EPOST	B					(90.4%)
	MSO (MSO ULTRA)	100	SL	1.5	% v/v	1.5	% v/v	EPOST	B					
	NIS (ACTIVATOR 90)	100	SL	0.25	% v/v	0.25	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					
9	WARRANT	3	CS	1.13	lb ai/a	3	pt/a	EPOST	B	0.79 a	1.00 a	0.73 a	2.52 a	2.52 a
	RAPTOR	1	SL	0.047	lb ai/a	6	fl oz/a	EPOST	B					(96.1%)
	NIS (ACTIVATOR 90)	100	SL	0.25	% v/v	0.25	% v/v	EPOST	B					
	ROUNDUP POWERMAX	4.5	SL	1.13	lb ae/a	32	fl oz/a	ASNEED1	D					
	AMS PREM BLEND	100	SL	5	% v/v	5	% v/v	ASNEED1	D					

Means followed by same letter do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Could not calculate LSD (% mean diff) for columns 5,7,8,9,10 because error mean square = 0.

Warrant in Alfalfa.

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Pest Code								MEDSA	MEDSA	MEDSA	MEDSA	MEDSA	
Crop Code								7-6-15	8-7-15	9-7-15	9-7-15	9-7-15	
Rating Date								Yield	Yield	Yield	Total Yield	Total Yield	
Rating Type								dw t/A	dw t/A	dw t/A	dw t/A	PERCON	
Rating Unit								Cutting 1	Cutting 2	Cutting 3	Cuttings 1-3	Cuttings 1-3	
Rating Timing								28 DA-B	22 DA-C				
Trt-Eval Interval													
Trt. No.	Treatment Name	Form Conc	Form Type	Rate Rate	Other Rate	Other Rate	Growth Unit Stage	Appl Code					
10	NONTREATED								0.88 a	1.00 a	0.74 a	2.62 a	2.62 a (100.0%)
LSD P=.05									0.132	0.211	0.117	0.327	0.327
Standard Deviation									0.077	0.123	0.068	0.191	0.191
CV									9.95	12.26	9.22	7.59	7.59
Replicate F									17.811	1.335	0.224	4.610	4.610
Replicate Prob(F)									0.0001	0.2880	0.8019	0.0242	0.0242
Treatment F									2.078	0.113	0.952	0.759	0.759
Treatment Prob(F)									0.0892	0.9989	0.5075	0.6541	0.6541

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Pest Code								MEDSA	MEDSA	MEDSA	
Crop Code								7-6-15	8-7-15	9-7-15	
Rating Date								Moisture	Moisture	Moisture	
Rating Type								Percent	Percent	Percent	
Rating Unit								Cutting 1	Cutting 2	Cutting 3	
Rating Timing								28 DA-B	22 DA-C		
Trt-Eval Interval											
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code			
1	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B	78.9 a	77.5 a	75.9 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
2	WARRANT	3	CS	1.13 lb ai/a	3 pt/a		PRE	A	79.2 a	78.0 a	77.7 a
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
3	WARRANT	3	CS	2.25 lb ai/a	6 pt/a		PRE	A	77.1 d	77.1 a	76.3 a
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
4	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B	78.7 ab	77.2 a	77.2 a
	WARRANT	3	CS	1.13 lb ai/a	3 pt/a		EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
5	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B	78.3 a-d	77.9 a	76.7 a
	WARRANT	3	CS	2.25 lb ai/a	6 pt/a		EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
6	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B	78.5 abc	76.5 a	77.8 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	WARRANT	3	CS	1.13 lb ai/a	3 pt/a		LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		LPOST	C			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED2	E			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED2	E			
7	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		EPOST	B	78.2 a-d	76.1 a	75.8 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		EPOST	B			
	WARRANT	3	CS	2.25 lb ai/a	6 pt/a		LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		LPOST	C			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED2	E			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED2	E			
8	SELECT MAX	0.97	EC	0.091 lb ai/a	12 fl oz/a		EPOST	B	77.6 bcd	76.4 a	74.9 a
	RAPTOR	1	SL	0.047 lb ai/a	6 fl oz/a		EPOST	B			
	MSO (MSO ULTRA)	100	SL	1.5 % v/v	1.5 % v/v		EPOST	B			
	NIS (ACTIVATOR 90)	100	SL	0.25 % v/v	0.25 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			
9	WARRANT	3	CS	1.13 lb ai/a	3 pt/a		EPOST	B	77.5 cd	77.2 a	74.5 a
	RAPTOR	1	SL	0.047 lb ai/a	6 fl oz/a		EPOST	B			
	NIS (ACTIVATOR 90)	100	SL	0.25 % v/v	0.25 % v/v		EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a		ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v		ASNEED1	D			

Warrant in Alfalfa.

Trial ID: 15-23E-N130      Location: Belleville Res. Center      Trial Year: 2015  
 Investigator: Ronald F. Krausz

Pest Code								MEDSA	MEDSA	MEDSA
Crop Code								7-6-15	8-7-15	9-7-15
Rating Date								Moisture	Moisture	Moisture
Rating Type								Percent	Percent	Percent
Rating Unit								Cutting 1	Cutting 2	Cutting 3
Rating Timing								28 DA-B	22 DA-C	
Trt-Eval Interval										
Trt. No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit Unit	Other Rate	Other Rate	Growth Unit Stage	Appl Code	
10	NONTREATED									78.3 a-d    77.9 a    76.0 a
LSD P=.05								1.22	2.05	2.24
Standard Deviation								0.71	1.20	1.30
CV								0.91	1.55	1.71
Replicate F								1.864	6.199	5.930
Replicate Prob(F)								0.1838	0.0090	0.0105
Treatment F								2.591	0.953	2.089
Treatment Prob(F)								0.0409	0.5067	0.0876

Warrant in Alfalfa.

Trial ID: 15-23E-N130 Location: Belleville Res. Center Trial Year: 2015  
Investigator: Ronald F. Krausz

Pest Code	Crop Code	Rating Date	Rating Type	Rating Unit	Rating Timing	Trt-Eval Interval	MEDSA 5-9-15 Injury Percent	MEDSA 5-23-15 Injury Percent	MEDSA 6-15-15 Injury Percent	MEDSA 6-29-15 Injury Percent	MEDSA 7-23-15 Injury Percent	MEDSA 8-6-15 Injury Percent			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	7 DA-A	21 DA-A	7 DA-B	21 DA-B	7 DA-C	21 DA-C
1	ROUNDUP POWERMAX AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	4.5 100	SL	1.13 5 %	lb ae/a v/v	32 5 %	fl oz/a v/v	EPOST EPOST ASNEED1 ASNEED1	B B D D			0 a	0 a	0 a	0 a
2	WARRANT ROUNDUP POWERMAX AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	3 4.5 100 4.5 100	CS SL	1.13 5 %	lb ai/a v/v	3 32 5 %	pt/a fl oz/a v/v	PRE EPOST EPOST ASNEED1 ASNEED1	A B B D D	0 a	0 a	0 a	0 a	0 a	0 a
3	WARRANT ROUNDUP POWERMAX AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	3 4.5 100 4.5 100	CS SL	2.25 1.13 5 %	lb ai/a ae/a v/v	6 32 5 %	pt/a fl oz/a v/v	PRE EPOST EPOST ASNEED1 ASNEED1	A B B D D	0 a	20 a	0 a	0 a	0 a	0 a
4	ROUNDUP POWERMAX WARRANT AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	4.5 3 100 4.5 100	SL CS	1.13 1.13 5 %	lb ae/a ai/a v/v	32 3 5 %	fl oz/a pt/a v/v	EPOST EPOST EPOST ASNEED1 ASNEED1	B B B D D			0 a	0 a	0 a	0 a
5	ROUNDUP POWERMAX WARRANT AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	4.5 3 100 4.5 100	SL CS	1.13 2.25 5 %	lb ae/a ai/a v/v	32 6 5 %	fl oz/a pt/a v/v	EPOST EPOST EPOST ASNEED1 ASNEED1	B B B D D			0 a	0 a	0 a	0 a
6	ROUNDUP POWERMAX AMS PREM BLEND WARRANT ROUNDUP POWERMAX AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	4.5 100 3 4.5 100 4.5 100	SL SL CS SL	1.13 5 % 1.13 5 %	lb ae/a v/v lb ai/a ae/a v/v	32 5 % 3 32 5 %	fl oz/a v/v pt/a fl oz/a v/v	EPOST EPOST LPOST LPOST ASNEED2 ASNEED2	B B C C E E			0 a	0 a	0 a	0 a
7	ROUNDUP POWERMAX AMS PREM BLEND WARRANT ROUNDUP POWERMAX AMS PREM BLEND ROUNDUP POWERMAX AMS PREM BLEND	4.5 100 3 4.5 100 4.5 100	SL SL CS SL	1.13 5 % 2.25 1.13 5 %	lb ae/a v/v lb ai/a ae/a v/v	32 5 % 6 32 5 %	fl oz/a v/v pt/a fl oz/a v/v	EPOST EPOST LPOST LPOST ASNEED2 ASNEED2	B B C C E E			0 a	0 a	0 a	0 a
8	SELECT MAX RAPTOR MSO (MSO ULTRA) NIS (ACTIVATOR 90) ROUNDUP POWERMAX AMS PREM BLEND	0.97 1 100 100 4.5 100	EC SL SL SL SL	0.091 0.047 1.5 % 0.25 % 1.13 5 %	lb ai/a ai/a v/v v/v lb ae/a v/v	12 6 1.5 % 0.25 % 32 5 %	fl oz/a oz/a v/v v/v fl oz/a v/v	EPOST EPOST EPOST EPOST ASNEED1 ASNEED1	B B B B D D			0 a	0 a	0 a	0 a
9	WARRANT RAPTOR NIS (ACTIVATOR 90) ROUNDUP POWERMAX AMS PREM BLEND	3 1 100 4.5 100	CS SL	1.13 0.047 0.25 % 1.13 5 %	lb ai/a ai/a v/v lb ae/a v/v	3 6 0.25 % 32 5 %	pt/a oz/a v/v fl oz/a v/v	EPOST EPOST EPOST ASNEED1 ASNEED1	B B B D D			0 a	0 a	0 a	0 a

Warrant in Alfalfa.

Trial ID: 15-23E-N130 Location: Belleville Res. Center Trial Year: 2015  
 Investigator: Ronald F. Krausz

Pest Code								
Crop Code								
Rating Date	MEDSA 5-9-15	MEDSA 5-23-15	MEDSA 6-15-15	MEDSA 6-29-15	MEDSA 7-23-15	MEDSA 8-6-15		
Rating Type	Injury Percent	Injury Percent	Injury Percent	Injury Percent	Injury Percent	Injury Percent		
Rating Unit	7 DA-A	21 DA-A	7 DA-B	21 DA-B	7 DA-C	21 DA-C		
Rating Timing								
Trt-Eval Interval								
Trt. Treatment No. Name	Form Conc	Form Type	Rate Rate	Unit Unit	Other Rate	Other Rate	Growth Unit Stage	Appl Code
10 NONTREATED	0		0		0		0	0
LSD P=.05	.	21.5	.	.	.	.	.	.
Standard Deviation	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0
CV	0.0	61.24	0.0	0.0	0.0	0.0	0.0	0.0
Replicate F	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Replicate Prob(F)	1.0000	0.5000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Treatment F	0.000	16.000	0.000	0.000	0.000	0.000	0.000	0.000
Treatment Prob(F)	1.0000	0.0572	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Warrant in Alfalfa.

Trial ID: 15-23E-N130 Location: Belleville Res. Center Trial Year: 2015  
Investigator: Ronald F. Krausz

Pest Code								MEDSA	MEDSA	MEDSA		
Crop Code								6-29-15	9-7-15	9-7-15		
Rating Date								Plants	Plants	Plants		
Rating Type								000/A	000/A	PERRED		
Rating Unit								Cutting 1	Cutting 3	Cutting 1vs3		
Rating Timing								21 DA-B				
Trt-Eval Interval												
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Rate	Other Rate	Other Unit	Growth Stage	Appl Code			
1	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B	1226.9 a	580.8 ab	51 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
2	WARRANT	3	CS	1.13 lb ai/a	3 pt/a			PRE	A	980.1 a	450.1 c	54 a
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
3	WARRANT	3	CS	2.25 lb ai/a	6 pt/a			PRE	A	929.3 a	566.3 ab	38 a
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
4	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B	987.4 a	580.8 ab	40 a
	WARRANT	3	CS	1.13 lb ai/a	3 pt/a			EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
5	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B	1060.0 a	588.1 ab	44 a
	WARRANT	3	CS	2.25 lb ai/a	6 pt/a			EPOST	B			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
6	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B	1060.0 a	551.8 abc	48 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	WARRANT	3	CS	1.13 lb ai/a	3 pt/a			LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			LPOST	C			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED2	E			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED2	E			
7	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			EPOST	B	1132.6 a	544.5 abc	51 a
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			EPOST	B			
	WARRANT	3	CS	2.25 lb ai/a	6 pt/a			LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			LPOST	C			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			LPOST	C			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED2	E			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED2	E			
8	SELECT MAX	0.97	EC	0.091 lb ai/a	12 fl oz/a			EPOST	B	1139.8 a	609.8 a	46 a
	RAPTOR	1	SL	0.047 lb ai/a	6 fl oz/a			EPOST	B			
	MSO (MSO ULTRA)	100	SL	1.5 % v/v	1.5 % v/v			EPOST	B			
	NIS (ACTIVATOR 90)	100	SL	0.25 % v/v	0.25 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			
9	WARRANT	3	CS	1.13 lb ai/a	3 pt/a			EPOST	B	1052.7 a	457.4 c	57 a
	RAPTOR	1	SL	0.047 lb ai/a	6 fl oz/a			EPOST	B			
	NIS (ACTIVATOR 90)	100	SL	0.25 % v/v	0.25 % v/v			EPOST	B			
	ROUNDUP POWERMAX	4.5	SL	1.13 lb ae/a	32 fl oz/a			ASNEED1	D			
	AMS PREM BLEND	100	SL	5 % v/v	5 % v/v			ASNEED1	D			

Warrant in Alfalfa.

Trial ID: 15-23E-N130 Location: Belleville Res. Center Trial Year: 2015  
 Investigator: Ronald F. Krausz

Pest Code								MEDSA	MEDSA	MEDSA	
Crop Code								6-29-15	9-7-15	9-7-15	
Rating Date								Plants	Plants	Plants	
Rating Type								000/A	000/A	PERRED	
Rating Unit								Cutting 1	Cutting 3	Cutting 1vs3	
Rating Timing								21 DA-B			
Trt-Eval Interval											
Trt. No.	Treatment Name	Form Conc	Form Type	Rate Rate	Other Rate	Other Rate	Growth Unit Stage	Appl Code			
10	NONTREATED								1052.7 a	493.7 bc	53 a
LSD P=.05								312.45	106.16	14.4	
Standard Deviation								182.14	61.89	8.4	
CV								17.15	11.41	17.48	
Replicate F								0.118	1.239	0.461	
Replicate Prob(F)								0.8896	0.3134	0.6378	
Treatment F								0.686	2.468	1.541	
Treatment Prob(F)								0.7122	0.0491	0.2078	

Warrant in Alfalfa.

Trial ID: 15-23E-N130      Location: Belleville Res. Center      Trial Year: 2015  
 Investigator: Ronald F. Krausz

## Trial Comments

1. Protocol: Monsanto (2015-01-24-09) (CONFIDENTIAL)
2. Ratings:  
 CI as growth reduction (visual), chlorosis, and necrosis at 7 and 21 DA-A, DA-B, and DA-C, rate all plots each time.  
 Alfalfa plant counts per square ft (2 counts per plot) before first cutting and after 3rd cutting.
3. Yield, 1st, 2nd, and 3rd cutting. Report data after 3rd cutting even if there are additional cuttings.
4. Application timings:  
 PRE (A) = After planting.  
 EPOST (B) = 4th trifoliolate before 1st cutting.  
 LPOST (C) = 10 days after first cutting, could be as soon as 7 days.  
 ASNEED1 (D) = As needed for weed control after 1st and 2nd cutting.  
 ASNEED2 (E) = As needed for weed control after 2nd cutting.  
 Applications D and E were not applied, not needed.
5. Do not sell alfalfa.
6. Rainfall following the PRE application was 4.09 inch over 4 days beginning 6 days later.  
 Rainfall following the EPOST application was 2.52 inch over 3 days beginning 6 days later.  
 Rainfall following the LPOST application was 0.35 inch over 2 days beginning 2 days later.
7. MEDSA = Alfalfa.  
 Yield, dw t/A = Ton per acre dry weight basis.  
 MEDSA, Total Yield, dw t/A, Cuttings 1-3 = Sum of alfalfa yield from cuttings 1, 2, and 3, ton/A.  
 MEDSA, Total Yield, PERCON, Cuttings 1-3 = Sum of alfalfa yield from cuttings 1, 2, and 3 expressed as the percentage of the nontreated control.  
 MEDSA, Plants, PERRED, Cutting 1vs3 = Alfalfa plant stand reduction, counts prior to first cutting versus after third cutting.
8. Calculations: (g wet harvest per 81 sqft) \* (alfalfa dry / alfalfa wet) \* (43560 / 81 / 453.6 / 2000) = Alfalfa, ton/A dry weight basis.
9. Harvested 3 ft by 27 ft per plot.