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Low rates of metsulfuron for weed control in wheat.

Trial ID: 12S-THP-CTW-91 Protocol ID: 12S-THP-CTW-91
 Location: Throckmorton Study Director: White/Marquardt
 Project ID: USA-12-224 Investigator: Dr. Bill Johnson
 Sponsor Contact: DuPont - Helen Flanigan

General Trial Information

Study Director: White/Marquardt **Title:** Research Associate
Investigator: Dr. Bill Johnson **Title:** Professor

Discipline: H herbicide
Trial Status: E established
Initiation Date: 3-27-2012

Trial Location

City: Lafayette
State/Prov.: IN
Postal Code: 47909
Country: USA

Personnel

Study Director: White/Marquardt **Title:** Research Associate
Affiliation: Purdue University
Address: 915 W State Street
Location: West Lafayette, IN, USA
Postal Code: 47907 **E-mail:** mdwhite@purdue.edu
Phone No.: 765-494-0891
Investigator: Dr. Bill Johnson **Title:** Professor
Affiliation: Purdue University
Address: 915 W State Street
Location: West Lafayette, IN, USA
Postal Code: 47907 **E-mail:** wgj@purdue.edu
Phone No.: 765-494-4656 **Mobile No.:** 765-404-9801

Cooperator/Landowner

Cooperator: Throckmorton Purdue Ag Center **Role:** Purdue Ag Center
Organization: Purdue University
Address 1: 8343 US 231 S
City: Lafayette
State/Prov.: IN
Postal Code: 47909 **E-mail:** jayyoung@purdue.edu
Country: USA United States
Phone No.: 765-538-3422
Fax No.: 765-538-3423

Crop Description

Crop 1: TRZAW Triticum aestivum (winter) Winter wheat
BBCH Scale: BCER

Pest Description

Pest 1 Type: W **Code:** CAPBP Capsella bursa-pastoris
Common Name: Shepherd's purse
Pest 2 Type: W **Code:** TAROF Taraxacum officinale
Common Name: Common dandelion
Pest 3 Type: W **Code:** STEME Stellaria media
Common Name: Common chickweed
Pest 4 Type: W **Code:** LAMAM Lamium amplexicaule
Common Name: Henbit

Site and Design

Plot Width, Unit: 10 FT **Site Type:** FIELD field
Plot Length, Unit: 30 FT **Experimental Unit:** 1 PLOT plot
Plot Area, Unit: 300 FT² **Tillage Type:** CONTIL conventional-till
Replications: 4 **Study Design:** RACOB Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

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Application Description

	A
Application Date:	4-3-2012
Application Method:	SPRAY
Application Timing:	A
Application Placement:	FOLIAR
Applied By:	MW
Air Temperature, Unit:	71 F
% Relative Humidity:	54
Wind Velocity, Unit:	7 MPH
Wind Direction:	S
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	54 F
Soil Moisture:	DRY
% Cloud Cover:	10

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	TRZAW BCER
Height, Unit:	12 IN

Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	CAPBP W
Height, Unit:	14 IN
Density, Unit:	1 YD2
Pest 2 Code, Type, Scale:	TAROF W
Height, Unit:	6 IN
Density, Unit:	5 YD2
Pest 3 Code, Type, Scale:	STEME W
Height, Unit:	5 IN
Density, Unit:	20 YD2
Pest 4 Code, Type, Scale:	LAMAM W
Height, Unit:	7 IN
Density, Unit:	10 YD2

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Application Equipment

	A
Appl. Equipment:	CO2 BKPK
Equipment Type:	SPRBAC
Operation Pressure, Unit:	17 PSI
Nozzle Type:	FLAT FAN
Nozzle Size:	XR 110 02
Nozzle Spacing, Unit:	15 IN
Nozzles/Row:	8
Boom Length, Unit:	10 FT
Boom Height, Unit:	18 IN
Ground Speed, Unit:	3 MPH
Carrier:	H2O
Water Hardness (ppm CaCO3):	150
Spray Volume, Unit:	15 gal/ac
Mix Size, Unit:	1.8 liters
Propellant:	CO2
Tank Mix (Y/N):	N no

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Pest Type						W Weed LAMAM	W Weed TAROF		
Pest Code						Lamium amplexi>	Taraxacum offi>		
Pest Scientific Name									
Pest Name						Henbit	Common dandel>		
Crop Code	TRZAW	TRZAW	TRZAW	TRZAW	TRZAW	TRZAW	TRZAW		
BBCH Scale	BCER	BCER	BCER	BCER	BCER	BCER	BCER		
Crop Scientific Name	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>		
Crop Name	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat		
Rating Date	4-13-2012	4-13-2012	4-13-2012	4-19-2012	4-19-2012	4-19-2012	4-19-2012		
Rating Type	PHYNLS	PHYCHL	PHYSTU	PHYCHL	PHYSTU	CONTRO	CONTRO		
Rating Unit	%	%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1	1		
Pest Stage Majority						12 IN	10 IN		
Pest Density, Unit						5 YD2	3 YD2		
Assessed By	MW	MW	MW	MW	MW	MW	MW		
Days After First/Last Applic.	10 10	10 10	10 10	16 16	16 16	16 16	16 16		
Trt-Eval Interval	10 DA-A	10 DA-A	10 DA-A	16 DA-A	16 DA-A	16 DA-A	16 DA-A		
Trt Treatment	Rate	Appl							
No. Name	Rate Unit Code								
1 Untreated Check			1	2	3	4	5	6	7
2 Harmony SG (50 SG)	0.25 oz ai/a A		0.0 a	0.0 b	0.0 a	0.0 a	0.0 a	0.0 b	0.0 a
Express (50 WG)	0.125 oz ai/a A		0.8 a	3.3 a	1.3 a	3.0 a	2.5 a	52.5 a	30.0 a
NIS	0.25 % v/v A								
3 Harmony SG (50 SG)	0.3 oz ai/a A		0.0 a	0.0 b	0.0 a	0.8 a	0.0 a	10.0 ab	17.5 a
Express (50 WG)	0.15 oz ai/a A								
NIS	0.25 % v/v A								
4 Metsulfuron (60 WG)	0.02 oz ai/a A		1.3 a	0.0 b	0.0 a	0.0 a	0.0 a	17.5 ab	22.5 a
NIS	0.25 % v/v A								
5 Express (50 WG)	0.15 oz ai/a A		0.0 a	0.0 b	1.5 a	1.3 a	0.0 a	20.0 ab	17.5 a
Metsulfuron (60 WG)	0.02 oz ai/a A								
NIS	0.25 % v/v A								
6 Harmony SG (50 SG)	0.25 oz ai/a A		1.5 a	0.8 b	1.5 a	1.3 a	1.8 a	40.0 ab	22.5 a
Express (50 WG)	0.125 oz ai/a A								
Metsulfuron (60 WG)	0.02 oz ai/a A								
NIS	0.25 % v/v A								
7 Harmony SG (50 SG)	0.3 oz ai/a A		0.0 a	0.8 b	2.0 a	0.0 a	3.3 a	47.5 a	27.5 a
Express (50 WG)	0.15 oz ai/a A								
Metsulfuron (60 WG)	0.02 oz ai/a A								
NIS	0.25 % v/v A								
LSD (P=.05)	1.91	1.93	1.88	3.16	2.64	30.50	31.47		
Standard Deviation	1.29	1.30	1.27	2.13	1.77	20.53	21.19		
CV	257.28	191.61	141.99	238.01	165.57	76.64	107.85		
Bartlett's X2	0.832	1.752	0.708	1.938	0.152	4.78	1.475		
P(Bartlett's X2)	0.66	0.416	0.871	0.585	0.927	0.443	0.916		
Replicate F	0.950	1.542	5.356	0.071	3.163	0.664	1.260		
Replicate Prob(F)	0.4376	0.2379	0.0082	0.9746	0.0499	0.5850	0.3178		
Treatment F	1.058	3.338	1.859	1.049	2.508	3.791	0.862		
Treatment Prob(F)	0.4227	0.0217	0.1437	0.4273	0.0608	0.0128	0.5407		

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Pest Type	W Weed	W Weed	W Weed			
Pest Code	STEME		LAMAM			
Pest Scientific Name	Stellaria media		Lamium amplexi>			
Pest Name	Common chickwe>		Henbit			
Crop Code	TRZAW	TRZAW	TRZAW	TRZAW	TRZAW	
BBCH Scale	BCER	BCER	BCER	BCER	BCER	
Crop Scientific Name	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>	Triticum aesti>	
Crop Name	Winter wheat	Winter wheat	Winter wheat	Winter wheat	Winter wheat	
Rating Date	4-19-2012	5-3-2012	5-3-2012	5-3-2012	5-3-2012	
Rating Type	CONTRO	CONTRO	CONTRO	PHYCHL	PHYSTU	
Rating Unit	%	%	%	%	%	
Number of Subsamples	1	1	1	1	1	
Pest Stage Majority	10 IN		14 IN			
Pest Density, Unit	10 YD2		5 FT2			
Assessed By	MW	MW	MW	MW	MW	
Days After First/Last Applic.	16 16	30 30	30 30	30 30	30 30	
Trt-Eval Interval	16 DA-A	30 DA-A	30 DA-A	30 DA-A	30 DA-A	
Trt Treatment	Rate	Rate	Rate	Rate	Rate	
No. Name	Rate Unit Code					
1 Untreated Check		8	9	10	11	12
2 Harmony SG (50 SG)	0.25 oz ai/a A	49.8 a	71.3 a	60.0 a	2.5 a	5.8 a
Express (50 WG)	0.125 oz ai/a A					
NIS	0.25 % v/v A					
3 Harmony SG (50 SG)	0.3 oz ai/a A	37.3 a	62.5 a	47.5 a	0.8 a	0.8 a
Express (50 WG)	0.15 oz ai/a A					
NIS	0.25 % v/v A					
4 Metsulfuron (60 WG)	0.02 oz ai/a A	52.5 a	42.5 a	37.5 a	0.8 a	1.3 a
NIS	0.25 % v/v A					
5 Express (50 WG)	0.15 oz ai/a A	37.5 a	67.5 a	55.0 a	0.8 a	2.0 a
Metsulfuron (60 WG)	0.02 oz ai/a A					
NIS	0.25 % v/v A					
6 Harmony SG (50 SG)	0.25 oz ai/a A	35.0 a	67.5 a	67.5 a	0.8 a	2.0 a
Express (50 WG)	0.125 oz ai/a A					
Metsulfuron (60 WG)	0.02 oz ai/a A					
NIS	0.25 % v/v A					
7 Harmony SG (50 SG)	0.3 oz ai/a A	50.0 a	67.5 a	50.0 a	2.0 a	4.0 a
Express (50 WG)	0.15 oz ai/a A					
Metsulfuron (60 WG)	0.02 oz ai/a A					
NIS	0.25 % v/v A					
LSD (P=.05)		41.81	30.96	31.04	2.62	3.91
Standard Deviation		28.14	20.84	20.89	1.76	2.64
CV		75.19	38.52	46.06	164.41	117.12
Bartlett's X2		8.53	8.086	2.606	2.727	5.083
P(Bartlett's X2)		0.129	0.152	0.76	0.742	0.406
Replicate F		0.946	2.090	2.495	1.519	3.228
Replicate Prob(F)		0.4394	0.1373	0.0927	0.2436	0.0470
Treatment F		1.636	6.084	4.495	0.959	2.280
Treatment Prob(F)		0.1945	0.0013	0.0060	0.4794	0.0819

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Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

Pest Code

LAMAM, Lamium amplexicaule, = US

TAROF, Taraxacum officinale, = US

STEME, Stellaria media, = US

Crop Code

TRZAW, BCER, Triticum aestivum (winter), = US

Rating Type

PHYNLS = phytotoxicity - necrosis, leaf spot

PHYCHL = phytotoxicity - chlorosis

PHYSTU = phytotoxicity - stunting

CONTRO = control / burndown or knockdown

Rating Unit

% = percent

YD2 = per square yard

FT2 = per square foot