Ohio State University
Horticulture and Crop Science

2,4-D Rates and Timing EPP in No Till Soybeans

Title No. 2:
Trial ID: 10NTS6 Protocol ID: 10NTS6
Location: WESTERN BRANCH G-7 Study Director:
Project ID: Investigator: Dr. Mark M. Loux
Sponsor Contact: John Smith, WinField Solutions

General Trial Information

Investigator: Dr. Mark M. Loux **Title:** Professor

Trial Location

City: South Charleston
State/Prov.: Ohio
Postal Code: 45368
Country: USA

Personnel

Investigator: Dr. Mark M. Loux **Title:** Professor
Affiliation: The Ohio State University
Address: 222 Kottman Hall, 2021 Coffey Road
Location: Columbus OH
Postal Code: 43210 **E-mail:** loux.1@osu.edu

Crop Description

Crop 1: GLXMA Glycine max Soybean
Variety: Pioneer 93Y20 **Description:** RR
BBCH Scale: BSOY **Planting Date:** May-16-2010
Planting Method: SEEDED seeded **Rate, Unit:** 196000 S/A
Depth, Unit: 0.75 IN
Row Spacing, Unit: 15 IN
Seed Bed: MEDTRA medium/trashy **Soil Temperature, Unit:** 59 F
Soil Moisture: NORMAL normal **Emergence Date:** May-25-2010

Pest Description

Pest 1 Type: W **Code:** ERICA Conyza canadensis
Common Name: Horseweed

Pest 2 Type: W **Code:** STEME Stellaria media
Common Name: Common chickweed

Pest 3 Type: W **Code:** VERPG Veronica peregrina
Common Name: Purslane speedwell

Pest 4 Type: W **Code:** LAMPU Lamium purpureum
Common Name: Purple deadnettel

Pest 5 Type: W **Code:** CAPBP Capsella bursa-pastoris
Common Name: Shepherd's purse

Pest 6 Type: W **Code:** SENGL Senecio glabellus
Common Name: Cressleaf groundsel

Pest 7 Type: W **Code:** AMBTR Ambrosia trifida
Common Name: Giant ragweed

Pest 8 Type: W **Code:** CHEAL Chenopodium album
Common Name: Common lambsquarters

Pest 9 Type: W **Code:** POLPY Polygonum pensylvanicum
Common Name: Pennsylvania smartweed

Site and Design

Plot Width, Unit: 6.67 FT **Site Type:** FIELD field
Plot Length, Unit: 30 FT **Experimental Unit:** 1 PLOT plot
Plot Area, Unit: 200.1 FT2 **Tillage Type:** NOTILL no-till
Replications: 3 **Study Design:** RACOBL Randomized Complete Block (RCB)
Untreated Arrangement: INCLUDED single control randomized in each block

Soil Description

Description Name: G-7
% OM: 2 **Texture:** SIL silt loam
pH: 6.2 **Soil Name:** Crosby
CEC: 14 **Fert. Level:** G good
Soil Drainage: G good

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Application Description

	A	B	C
Application Date:	Apr-30-2010	May-6-2010	May-16-2010
Time of Day:	9:00 A.M.	1:00 P.M.	8:30 A.M.
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	14 EPP	7 EPP	PRE
Application Placement:	BROFO	BROFO	BROFO
Applied By:	McCormick	McCormick	Dobbels
Air Temperature, Unit:	64 F	62 F	56 F
% Relative Humidity:	58	58	73
Wind Velocity, Unit:	8 MPH	3 MPH	6 MPH
Wind Direction:	S	S	N3
Dew Presence (Y/N):	N no	N no	N no
Soil Temperature, Unit:	52 F	60 F	59 F
Soil Moisture:	DRY	DRY	NORMAL
% Cloud Cover:	20	2	100
Next Rain Occurred On:	May-1-2010	May-7-2010	May-17-2010

Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY

Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	ERICA W	ERICA W	ERICA W
Stage Majority, Percent:	19 100	19 100	19 100
Diameter, Unit:	4 IN	5 IN	7 IN
Height, Unit:	3 IN	5 IN	7 IN
Height Minimum, Maximum:	2 3	3 6	5 8
Density, Unit:	3 M2	3 M2	12 M2
Pest 2 Code, Type, Scale:	STEME W	STEME W	STEME W
Stage Majority, Percent:	65 100	65 100	65 100
Diameter, Unit:	20 IN	20 IN	20 IN
Height, Unit:	3 IN	3 IN	3 IN
Height Minimum, Maximum:	3 3	3 3	3 4
Density, Unit:	1 M2	1 M2	1 M2
Pest 3 Code, Type, Scale:	VERPG W	VERPG W	VERPG W
Stage Majority, Percent:	65 100	65 100	65 100
Diameter, Unit:	4 IN	4 IN	6 IN
Height, Unit:	5 IN	6 IN	8 IN
Height Minimum, Maximum:	3 6	4 6	6 8
Density, Unit:	2 M2	2 M2	2 M2
Pest 4 Code, Type, Scale:	LAMPU W	LAMPU W	LAMPU W
Stage Majority, Percent:	65 100	65 100	65 100
Diameter, Unit:	12 IN	12 IN	12 IN
Height, Unit:	6 IN	6 IN	6 IN
Height Minimum, Maximum:	5 6	5 6	5 6
Density, Unit:	0.33 M2	0.33 M2	0.33 M2
Pest 5 Code, Type, Scale:	CAPBP W	CAPBP W	CAPBP W
Stage Majority, Percent:	65 100	65 100	65 100
Diameter, Unit:	6 IN	8 IN	8 IN
Height, Unit:	20 IN	20 IN	22 IN
Height Minimum, Maximum:	18 20	18 20	20 22
Density, Unit:	0.33 M2	0.33 M2	0.33 M2
Pest 6 Code, Type, Scale:	SENGL W	SENGL W	SENGL W
Stage Majority, Percent:	55 100	65 100	65 100
Diameter, Unit:	9 IN	10 IN	10 IN
Height, Unit:	12 IN	14 IN	18 IN
Height Minimum, Maximum:	10 12	12 20	18 20
Density, Unit:	0.66 M2	0.66 M2	0.66 M2
Pest 7 Code, Type, Scale:	AMBTR W	AMBTR W	AMBTR W
Stage Majority, Percent:		13 100	14 100
Diameter, Unit:		3 IN	4 IN
Height, Unit:		4 IN	6 IN
Height Minimum, Maximum:		3 4	6 8
Density, Unit:		6 M2	6 M2
Pest 8 Code, Type, Scale:	CHEAL W	CHEAL W	CHEAL W
Stage Majority, Percent:		14 100	
Diameter, Unit:		2 IN	
Height, Unit:		4 IN	
Height Minimum, Maximum:		3 4	
Density, Unit:		4 M2	
Pest 9 Code, Type, Scale:	POLPY W	POLPY W	POLPY W
Stage Majority, Percent:		13 100	
Diameter, Unit:		1 IN	
Height, Unit:		2 IN	
Height Minimum, Maximum:		1 2	
Density, Unit:		0.25 M2	

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Application Equipment

	A	B	C
Appl. Equipment:	6 foot boom	6 foot boom	6 foot boom
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operating Pressure, Unit:	53 PSI	53 PSI	53 PSI
Nozzle Type:	TEEJET DG	TEEJET DG	TEEJET DG
Nozzle Size:	8002	8002	8002
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN
Boom Length, Unit:	6 FT	6 FT	6 FT
Boom Height, Unit:	20 IN	20 IN	20 IN
Ground Speed, Unit:	3 MPH	3 MPH	3 MPH
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA
Mix Size, Unit:	0.33 Gallons	0.33 Gallons	0.33 Gallons
Propellant:	CO2	CO2	CO2

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Pest Type	W Weed	W Weed	W Weed	W Weed
Pest Code	STEME	LAMPU	ERICA	VERPG
Pest Scientific Name	Stellaria media	Lamium purpure>	Conyza canaden>	Veronica pereg>
Pest Name	Common chickwe>	Purple deadnet>	Canada horsewe>	Purslane speed>
Crop Code				
BBCH Scale				
Crop Scientific Name				
Crop Name				
Rating Date	May-17-2010	May-17-2010	May-17-2010	May-17-2010
Rating Type	CONTROL	CONTROL	CONTROL	CONTROL
Rating Unit	%	%	%	%
Number of Subsamples	1	1	1	1
Days After First/Last Applic.	17 1	17 1	17 1	17 1
Trt-Eval Interval	11 DA-B	11 DA-B	11 DA-B	11 DA-B
Plant-Eval Interval	1 DP-1	1 DP-1	1 DP-1	1 DP-1
Days After Emergence	-8 DE-	-8 DE-	-8 DE-	-8 DE-
Number of Decimals	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Unit	Other Rate	Other Rate Unit	Appl Code	1	2	3	4
1	E-99	6.1	LBA/GAL	0.67	pt/a	C	0	0	0	0
1	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
2	E-99	6.1	LBA/GAL	0.67	pt/a	B	60	63	47	53
2	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
3	E-99	6.1	LBA/GAL	0.67	pt/a	A	87	67	78	90
3	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
4	E-99	6.1	LBA/GAL	1.33	pt/a	C	0	0	0	0
4	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
5	E-99	6.1	LBA/GAL	1.33	pt/a	B	60	53	50	60
5	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
6	E-99	6.1	LBA/GAL	1.33	pt/a	A	88	68	78	90
6	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
7	AGH 09008	100		1	pt/a	C	0	0	0	0
7	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
8	AGH 09008	100		1	pt/a	B	70	67	58	60
8	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
9	AGH 09008	100		1	pt/a	A	88	77	75	90
9	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
10	AGH 09008	100		1	qt/a	C	0	0	0	0
10	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
11	AGH 09008	100		1	qt/a	B	60	60	57	67
11	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
12	AGH 09008	100		1	qt/a	A	73	60	70	90
12	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
13	2,4-D Ester	4	LBA/GAL	1	pt/a	C	0	0	0	0
13	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
14	Untreated						0	0	0	0
LSD (P=.05)							12.8	23.6	9.9	8.8
Standard Deviation							7.6	14.0	5.9	5.3
CV							18.22	38.14	16.01	12.27
Bartlett's X2							6.801	6.069	5.562	0.052
P(Bartlett's X2)							0.236	0.415	0.474	0.975
Replicate F							0.439	0.336	3.436	0.258
Replicate Prob(F)							0.6493	0.7179	0.0474	0.7743
Treatment F							77.640	17.054	102.183	176.689
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Unit	Other Rate	Other Rate Unit	Appl Code	5	6	7	8	9
	Pest Type						W Weed	W Weed		W Weed	W Weed
	Pest Code						SENGL	AMBTR		ERICA	AMBTR
	Pest Scientific Name						Senecio glabel>	Ambrosia trifi>		Conyza canaden>	Ambrosia trifi>
	Pest Name						Cressleaf grou>	Giant ragweed		Canada horsewe>	Giant ragweed
	Crop Code								GLXMA		
	BBCH Scale								BSOY		
	Crop Scientific Name								Glycine max		
	Crop Name								Soybean		
	Rating Date						May-17-2010	May-17-2010	Jun-2-2010	Jun-2-2010	Jun-2-2010
	Rating Type						CONTROL	CONTROL	PHYLMA	CONTROL	CONTROL
	Rating Unit						%	%	%	%	%
	Number of Subsamples						1	1	1	1	1
	Days After First/Last Applic.						17 1	17 1	33 17	33 17	33 17
	Trt-Eval Interval						11 DA-B	11 DA-B	27 DA-B	27 DA-B	27 DA-B
	Plant-Eval Interval						1 DP-1	1 DP-1	17 DP-1	17 DP-1	17 DP-1
	Days After Emergence						-8 DE-	-8 DE-	8 DE-1	8 DE-1	8 DE-1
	Number of Decimals						0	0	0	0	0
1	E-99	6.1	LBA/GAL	0.67	pt/a	C	0	0	0	67	100
1	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
2	E-99	6.1	LBA/GAL	0.67	pt/a	B	60	80	0	87	100
2	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
3	E-99	6.1	LBA/GAL	0.67	pt/a	A	85	100	0	89	100
3	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
4	E-99	6.1	LBA/GAL	1.33	pt/a	C	0	0	5	63	100
4	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
5	E-99	6.1	LBA/GAL	1.33	pt/a	B	60	73	0	89	94
5	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
6	E-99	6.1	LBA/GAL	1.33	pt/a	A	85	97	0	98	100
6	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
7	AGH 09008	100		1	pt/a	C	0	0	12	77	100
7	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
8	AGH 09008	100		1	pt/a	B	60	80	1	85	100
8	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
9	AGH 09008	100		1	pt/a	A	100	100	3	67	93
9	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
10	AGH 09008	100		1	qt/a	C	0	0	0	60	100
10	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
11	AGH 09008	100		1	qt/a	B	75	83	3	66	100
11	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
12	AGH 09008	100		1	qt/a	A	85	93	0	70	85
12	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
13	2,4-D Ester	4	LBA/GAL	1	pt/a	C	0	0	1	68	93
13	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a						
14	Untreated						0	0	0	0	0
	LSD (P=.05)						14.6	6.9	4.2	14.1	10.4
	Standard Deviation						8.6	4.1	2.5	8.4	6.2
	CV						19.71	8.19	138.23	11.91	6.83
	Bartlett's X2						5.305	1.34	5.013	12.125	0.168
	P(Bartlett's X2)						0.257	0.72	0.414	0.354	0.983
	Replicate F						0.169	2.126	3.943	0.906	1.101
	Replicate Prob(F)						0.8453	0.1396	0.0320	0.4166	0.3476
	Treatment F						67.342	371.689	5.145	23.480	54.819
	Treatment Prob(F)						0.0001	0.0001	0.0002	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Unit	Other Rate	Other Rate Unit	Appl Code	10	11	12	13
	Pest Type						W Weed	W Weed		W Weed
	Pest Code						STEME	SENGL		ERICA
	Pest Scientific Name						Stellaria media	Senecio glabel>		Conyza canaden>
	Pest Name						Common chickwe>	Cressleaf grou>		Canada horsewe>
	Crop Code								GLXMA	
	BBCH Scale								BSOY	
	Crop Scientific Name								Glycine max	
	Crop Name								Soybean	
	Rating Date						Jun-2-2010	Jun-2-2010	Jun-14-2010	Jun-14-2010
	Rating Type						CONTROL	CONTROL	PHYLMA	CONTROL
	Rating Unit						%	%	%	%
	Number of Subsamples						1	1	1	1
	Days After First/Last Applic.						33 17	33 17	45 29	45 29
	Trt-Eval Interval						27 DA-B	27 DA-B	39 DA-B	39 DA-B
	Plant-Eval Interval						17 DP-1	17 DP-1	29 DP-1	29 DP-1
	Days After Emergence						8 DE-1	8 DE-1	20 DE-	20 DE-
	Number of Decimals						0	0	0	0
1	E-99	6.1	LBA/GAL	0.67	pt/a	C	100	100	8	60
1	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
2	E-99	6.1	LBA/GAL	0.67	pt/a	B	100	100	0	67
2	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
3	E-99	6.1	LBA/GAL	0.67	pt/a	A	100	100	0	63
3	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
4	E-99	6.1	LBA/GAL	1.33	pt/a	C	100	100	8	68
4	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
5	E-99	6.1	LBA/GAL	1.33	pt/a	B	100	100	0	83
5	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
6	E-99	6.1	LBA/GAL	1.33	pt/a	A	100	100	0	75
6	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
7	AGH 09008	100		1	pt/a	C	98	93	10	60
7	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
8	AGH 09008	100		1	pt/a	B	100	100	2	63
8	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
9	AGH 09008	100		1	pt/a	A	100	100	0	50
9	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
10	AGH 09008	100		1	qt/a	C	100	98	5	57
10	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
11	AGH 09008	100		1	qt/a	B	100	98	2	62
11	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
12	AGH 09008	100		1	qt/a	A	98	90	0	37
12	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
13	2,4-D Ester	4	LBA/GAL	1	pt/a	C	100	100	12	57
13	Roundup PowerMax	4.5	LBAE/GAL	22	oz/a					
14	Untreated						0	0	0	0
	LSD (P=.05)						1.7	7.3	2.7	18.1
	Standard Deviation						1.0	4.3	1.6	10.8
	CV						1.11	4.74	47.88	18.79
	Bartlett's X2						0.037	5.365	5.707	7.708
	P(Bartlett's X2)						0.848	0.147	0.222	0.564
	Replicate F						0.879	0.285	3.661	1.255
	Replicate Prob(F)						0.4273	0.7546	0.0397	0.3018
	Treatment F						2016.797	111.854	21.149	10.108
	Treatment Prob(F)						0.0001	0.0001	0.0001	0.0001

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Project ID: Investigator: Dr. Mark M. Loux
Sponsor Contact: John Smith, WinField Solutions

Pest Type
W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop
Pest Code
STEME, Stellaria media, = US
LAMPU, Lamium purpureum, = US
ERICA, Conyza canadensis, = US
VERPG, Veronica peregrina, = US
SENGL, Senecio glabellus, = US
AMBTR, Ambrosia trifida, = US
Crop Code
GLXMA, BSOY, Glycine max, = US
Rating Type
PHYLMA = phytotoxicity - leaf malformation
Rating Unit
% = percent
Plant-Eval Interval
1 DP-1 = 1 May-16-2010
17 DP-1 = 1 May-16-2010
29 DP-1 = 1 May-16-2010