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Preemergence herbicide programs for corn.

Trial ID: 10S-THP-CTC-51 Protocol ID: 10S-THP-CTC-51
 Location: Throckmorton Study Director: White/Marquardt
 Project ID: Investigator: Dr. Bill Johnson
 Sponsor Contact: Bayer & Syngenta

General Trial Information

Study Director: Paul Marquardt/Mike White **Title:** Research Associate
Investigator: Dr. William G. Johnson **Title:** Professor

Discipline: H herbicide
Trial Status: E established
Initiation Date: 3-12-2010

Trial Location

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

Personnel

Study Director: Paul Marquardt/Mike White **Title:** Research Associate

Affiliation: Purdue University
Address: 915 W. State St., Botany and Plant Pathology
Location: West Lafayette, IN

Postal Code: 47907 **E-mail:** pmarquar@purdue.edu

Phone No.: 765-494-4621 **Mobile No.:** 765-409-6369

Investigator: Dr. William G. Johnson **Title:** Professor

Affiliation: Purdue University
Address: 915 W. State St.
Location: West Lafayette, IN USA

Postal Code: 47907 **E-mail:** wgj@purdue.edu

Phone No.: 765-494-4656

Cooperator/Landowner

Cooperator: Throckmorton Purdue Ag Center

Role: Purdue Ag Center

Organization: Purdue University

Address 1: 8343 US 231 S

Phone No.: 765-538-3422

Fax No.: 765-538-3423

City: Lafayette

State/Prov.: IN

Postal Code: 47909

E-mail: jayyoung@purdue.edu

Country: US

Crop Description

Crop 1: ZEAMX Zea mays Corn

Variety: PIONEER 33W84

Description: Roundup Ready/ Liberty Link

BBCH Scale: BCOR

Planting Date: 4-19-2010

Rate, Unit: 32000 S/A

Depth, Unit: 1.5 IN

Row Spacing, Unit: 30 IN

Seed Bed: MEDIUM medium

Soil Temperature, Unit: 60 F

Soil Moisture: DRY dry

Emergence Date: 5-2-2010

Pest Description

Pest 1 Type: W **Code:** SETFA *Setaria faberi*

Common Name: Giant foxtail

Pest 2 Type: W **Code:** AMBTR *Ambrosia trifida*

Common Name: Giant ragweed

Pest 3 Type: W **Code:** ABUTH *Abutilon theophrasti*

Common Name: Velvetleaf

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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Soil Description

Description Name: TPAC Field 4A
% OM: 3.1 **Texture:** SIL silt loam
pH: 6 **Soil Name:** Toronto-Millbrook
CEC: 11.1

Application Description

	A	B
Application Date:	4-20-2010	5-14-2010
Application Method:	SPRAY	SPRAY
Application Timing:	ATPLAN	EAPOCR
Application Placement:	BROADC	BROADC
Applied By:	HENRY	RT
Air Temperature, Unit:	55 F	57 F
% Relative Humidity:	57	72
Wind Velocity, Unit:	2 MPH	3.1 MPH
Wind Direction:	SE	W
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	60 F	64 F
Soil Moisture:	DRY	MOIST
% Cloud Cover:	80	50

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	ZEAMX BCOR	ZEAMX BCOR

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	SETFA W	SETFA W
Height, Unit:		1.5 IN
Height Minimum, Maximum:		1 2
Density, Unit:		75.5 YD2
Pest 2 Code, Type, Scale:	AMBTR W	AMBTR W
Stage Majority, Percent:		COTYL 100
Height, Unit:		3 IN
Density, Unit:		2.5 YD2
Pest 3 Code, Type, Scale:	ABUTH W	ABUTH W
Stage Majority, Percent:		COTYL 100
Height, Unit:		3 IN
Density, Unit:		1.5 YD2

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Application Equipment		
	A	B
Appl. Equipment:	CO2 Backpack	CO2 Backpack
Equipment Type:	SPRBAC	SPRBAC
Operating Pressure, Unit:	17 PSI	17 PSI
Nozzle Type:	XR11002	XR11002
Nozzle Spacing, Unit:	15 IN	15 IN
Nozzles/Row:	8	8
Boom Length, Unit:	10 FT	10 FT
Boom Height, Unit:	18 IN	18 IN
Ground Speed, Unit:	3 MPH	3 MPH
Carrier:	MEIGS	MEIGS
Spray Volume, Unit:	15 gal/ac	15 gal/ac
Mix Size, Unit:	1.8 liters	1.8 liters
Propellant:	CO2	CO2

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Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed		
Pest Code	SETFA	AMBTR	ABUTH	IPOHE	CHEAL		
Pest Scientific Name	Setaria faberi	Ambrosia trifid	Abutilon theophrasti	Ipomoea hederifolia	Chenopodium album		
Pest Name	Giant foxtail	Giant ragweed	Velvetleaf	Ipomoea leaf morning glory	Common lambsquarters		
Crop Code						ZEAMX	ZEAMX
BBCH Scale						BCOR	BCOR
Crop Scientific Name						Zea mays	Zea mays
Crop Name						Corn	Corn
Crop Variety							
Description							
Rating Date	5-18-2010	5-18-2010	5-18-2010	5-18-2010	5-18-2010	5-18-2010	5-18-2010
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	CONTRO	PHYNLS	PHYLCU
Rating Unit	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1	1
Crop Stage Majority							
Pest Stage Majority	.5-3"	.5-3"	.5-2"	.5"	.5-1"		
Pest Density, Unit	250 YD2	7 YD2	4 YD2	2 YD2	2 YD2		
Assessed By	MW	MW	MW	MW	MW	MW	MW

Trt No.	Treatment Name	Rate	Unit	Appl Code	1	2	3	4	5	6	7
12	Resolve (25 SG)	0.24	oz ai/a	A	73.8 c	72.3 a	99.0 a	67.0 a	99.0 a	3.5 a	0.0 a
	Isoxaflutole (75 SG)	0.48	oz ai/a	A							

LSD (P=.05)	11.32	15.78	12.67	35.69	0.00	2.97	1.27
Standard Deviation	7.84	10.93	8.78	24.72	0.00	2.06	0.88
CV	11.8	19.56	12.43	32.15	0.0	176.23	351.62
Bartlett's X2	6.335	13.699	5.003	21.252	0.0	7.496	0.0
P(Bartlett's X2)	0.387	0.187	0.082	0.003*	.	0.484	.
Replicate F	3.226	2.379	0.685	0.911	0.000	0.434	0.647
Replicate Prob(F)	0.0349	0.0875	0.5675	0.4463	1.0000	0.7303	0.5904
Treatment F	98.387	45.161	94.185	5.493	0.000	1.111	0.706
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001	1.0000	0.3837	0.7240

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.

Column 1: Weed or volunteer crop; US; control / burndown or knockdown; percent; .5-3"; per square yard; MW
 Column 2: Weed or volunteer crop; US; control / burndown or knockdown; percent; .5-3"; per square yard; MW
 Column 3: Weed or volunteer crop; US; control / burndown or knockdown; percent; .5-2"; per square yard; MW
 Column 4: Weed or volunteer crop; US; control / burndown or knockdown; percent; .5"; per square yard; MW
 Column 5: Weed or volunteer crop; US; control / burndown or knockdown; percent; .5-1"; per square yard; MW
 Column 6: US; phytotoxicity - necrosis, leaf spot; MW
 Column 7: US; phytotoxicity - leaf curl; MW
 Column 8: US; phytotoxicity - chlorosis; MW
 Column 9: Weed or volunteer crop; US; CONTTO; percent; 12"; per square yard; MW
 Column 10: Weed or volunteer crop; US; control / burndown or knockdown; percent; 21"; per square yard; MW
 Column 11: Weed or volunteer crop; US; control / burndown or knockdown; percent; 13"; per square yard; MW
 Column 12: Weed or volunteer crop; US; control / burndown or knockdown; percent; 2"; per square yard; MW
 Column 13: US; phytotoxicity - general / injury; percent; WGJ
 Column 14: Weed or volunteer crop; US; control / burndown or knockdown; percent; 3-9"; per square foot; WGJ
 Column 15: Weed or volunteer crop; US; control / burndown or knockdown; percent; 6-8"; per square foot; WGJ
 Column 16: Weed or volunteer crop; US; control / burndown or knockdown; percent; 6-24"; per square foot; WGJ
 Column 17: Weed or volunteer crop; US; control / burndown or knockdown; percent; 36"; per square yard
 Column 18: Weed or volunteer crop; US; control / burndown or knockdown; percent; 36"; per square yard
 Column 19: US; yield; bushel 56 lb
 Column 20: US; moisture content; percent

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Pest Type		W Weed SETFA Setaria faberi Giant foxtail	W Weed AMBTR Ambrosia trifi> Giant ragweed	W Weed ABUTH Abutilon theop> Velvetleaf	W Weed CHEAL Chenopodium al> Common lambsqu>		W Weed SETFA Setaria faberi Giant foxtail		
Pest Code									
Pest Scientific Name									
Pest Name									
Crop Code	ZEAMX					ZEAMX			
BBCH Scale	BCOR					BCOR			
Crop Scientific Name	Zea mays					Zea mays			
Crop Name	Corn					Corn			
Crop Variety									
Description									
Rating Date	5-18-2010	6-3-2010	6-3-2010	6-3-2010	6-3-2010	6-29-2010	6-29-2010		
Rating Type	PHYCHL	CONTTO	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO		
Rating Unit		%	%	%	%	%	%		
Number of Subsamples	1	1	1	1	1	1	1		
Crop Stage Majority									
Pest Stage Majority		12"	21"	13"	2"		3-9"		
Pest Density, Unit		200 YD2	11 YD2	3 YD2	5 YD2		25 FT2		
Assessed By	MW	MW	MW	MW	MW	WGJ	WGJ		
Trt Treatment	Rate	Appl	8	9	10	11	12	13	14
No. Name	Rate Unit	Code							
1 Untreated Check			0.8 ab	0.0 d	0.0 d	0.0 b	0.0 b	0.0 a	0.0 c
2 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1.5 lb ai/a	A A	0.8 ab	95.8 ab	80.0 ab	99.0 a	99.0 a	0.0 a	81.3 a
3 Balance Flexx (2 SC) Atrazine	0.094 lb ai/a 1.5 lb ai/a	A A	3.3 ab	80.0 c	62.5 c	99.0 a	99.0 a	1.3 a	46.3 b
4 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1 lb ai/a	B B	4.5 a	95.3 ab	90.0 ab	99.0 a	99.0 a	0.0 a	92.0 a
5 Balance Flexx (2 SC) Atrazine	0.094 lb ai/a 1 lb ai/a	B B	0.8 ab	96.5 ab	94.8 a	99.0 a	99.0 a	0.0 a	93.8 a
6 Capreno (3.45 SL) Roundup PowerMax 4.5 SL COC AMS - Liquid	0.081 lb ai/a 0.387 lb ae/a 1 % v/v 8.5 lb ai/100 gal	B B B B	4.3 a	95.5 ab	78.8 ab	99.0 a	99.0 a	0.0 a	83.8 a
7 Lumax (3.95 SC)	2.47 lb ai/a	A	0.8 ab	96.5 ab	86.3 ab	99.0 a	99.0 a	0.0 a	96.5 a
8 Lexar (3.7 SC)	2.78 lb ai/a	A	0.0 b	98.0 a	88.8 ab	99.0 a	99.0 a	0.0 a	95.3 a
9 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1 lb ai/a	A A	1.5 ab	98.5 a	89.3 ab	99.0 a	99.0 a	0.0 a	89.0 a
10 Integrity (5.57 SC)	1.09 lb ai/a	A	1.5 ab	98.5 a	73.8 bc	99.0 a	99.0 a	0.0 a	94.3 a
11 Sharpen 2.85 SC Guardsman Max (5 SC)	0.067 lb ai/a 2.66 lb ai/a	A A	0.0 b	95.5 ab	75.0 bc	99.0 a	99.0 a	2.5 a	93.3 a

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Pest Type		W Weed	W Weed	W Weed	W Weed		W Weed				
Pest Code		SETFA	AMBTR	ABUTH	CHEAL		SETFA				
Pest Scientific Name		Setaria faberi	Ambrosia trifi>	Abutilon theop>	Chenopodium al>		Setaria faberi				
Pest Name		Giant foxtail	Giant ragweed	Velvetleaf	Common lambsqu>		Giant foxtail				
Crop Code	ZEAMX					ZEAMX					
BBCH Scale	BCOR					BCOR					
Crop Scientific Name	Zea mays					Zea mays					
Crop Name	Corn					Corn					
Crop Variety											
Description											
Rating Date	5-18-2010	6-3-2010	6-3-2010	6-3-2010	6-3-2010	6-29-2010	6-29-2010				
Rating Type	PHYCHL	CONTTO	CONTRO	CONTRO	CONTRO	PHYGEN	CONTRO				
Rating Unit		%	%	%	%	%	%				
Number of Subsamples	1	1	1	1	1	1	1				
Crop Stage Majority											
Pest Stage Majority		12"	21"	13"	2"		3-9"				
Pest Density, Unit		200 YD2	11 YD2	3 YD2	5 YD2		25 FT2				
Assessed By	MW	MW	MW	MW	MW	WGJ	WGJ				
Trt No.	Treatment Name	Rate	Unit	Appl Code	8	9	10	11	12	13	14
12	Resolve (25 SG)	0.24	oz ai/a	A	0.8 ab	86.3 bc	73.8 bc	99.0 a	99.0 a	0.0 a	51.3 b
	Isoxaflutole (75 SG)	0.48	oz ai/a	A							
LSD (P=.05)		2.49			6.74	10.71	0.00	0.00	0.00	1.55	10.88
Standard Deviation		1.73			4.67	7.42	0.00	0.00	0.00	1.07	7.54
CV		110.58			5.4	9.97	0.0	0.0	0.0	343.48	9.87
Bartlett's X2		3.262			46.98	9.196	0.0	0.0	0.0	0.061	36.137
P(Bartlett's X2)		0.953			0.001*	0.514	.	.	.	0.805	0.001*
Replicate F		0.863			1.463	2.926	0.000	0.000	0.000	1.658	0.334
Replicate Prob(F)		0.4700			0.2426	0.0482	1.0000	1.0000	1.0000	0.1951	0.8008
Treatment F		3.275			141.402	45.960	0.000	0.000	0.000	2.096	60.965
Treatment Prob(F)		0.0040			0.0001	0.0001	1.0000	1.0000	1.0000	0.0497	0.0001

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Pest Type	W Weed	W Weed	W Weed	W Weed				
Pest Code	AMBTR	CHEAL	SETFA	AMBTR				
Pest Scientific Name	Ambrosia trifi>	Chenopodium al>	Setaria faberi	Ambrosia trifi>				
Pest Name	Giant ragweed	Common lambsqu>	Giant foxtail	Giant ragweed				
Crop Code								
BBCH Scale								
Crop Scientific Name					ZEAMD	ZEAMD		
Crop Name					BCOR	BCOR		
Crop Variety					Zea mays inden>	Zea mays inden>		
Description					Dent corn	Dent corn		
Rating Date	6-29-2010	6-29-2010	9-9-2010	9-9-2010	9-24-2010	9-24-2010		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	YIELD	MOICON		
Rating Unit	%	%	%	%	BU56LB	%		
Number of Subsamples	1	1	1	1	1	1		
Crop Stage Majority								
Pest Stage Majority	6-8"	6-24"	36"	36"				
Pest Density, Unit	5.5 FT2	4 FT2	100 YD2	10 YD2				
Assessed By	WGJ	WGJ						
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	15	16	17	18	19	20
1 Untreated Check			0.0 d	0.0 b	0.0 d	0.0 d	36.28 c	13.53 ab
2 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1.5 lb ai/a	A A	52.5 bc	100.0 a	91.3 ab	77.5 abc	158.70 ab	12.60 ab
3 Balance Flexx (2 SC) Atrazine	0.094 lb ai/a 1.5 lb ai/a	A A	42.5 c	100.0 a	78.8 bc	50.0 c	129.40 b	14.03 a
4 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1 lb ai/a	B B	94.8 ab	100.0 a	94.3 a	95.5 a	193.60 a	13.03 ab
5 Balance Flexx (2 SC) Atrazine	0.094 lb ai/a 1 lb ai/a	B B	98.3 a	100.0 a	94.3 a	98.5 a	208.13 a	13.53 ab
6 Capreno (3.45 SL) Roundup PowerMax 4.5 SL COC AMS - Liquid	0.081 lb ai/a 0.387 lb ae/a 1 % v/v 8.5 lb ai/100 gal	B B B B	61.3 abc	100.0 a	90.0 ab	73.8 abc	178.75 a	13.55 ab
7 Lumax (3.95 SC)	2.47 lb ai/a	A	86.3 abc	100.0 a	96.5 a	90.0 ab	184.98 a	12.53 ab
8 Lexar (3.7 SC)	2.78 lb ai/a	A	84.5 abc	100.0 a	96.5 a	89.8 ab	180.53 a	13.08 ab
9 Corvus (2.63 SC) Atrazine	0.115 lb ai/a 1 lb ai/a	A A	83.8 abc	100.0 a	90.0 ab	81.3 ab	188.40 a	13.38 ab
10 Integrity (5.57 SC)	1.09 lb ai/a	A	47.5 c	100.0 a	95.5 a	60.0 bc	156.10 ab	13.10 ab
11 Sharpen 2.85 SC Guardsman Max (5 SC)	0.067 lb ai/a 2.66 lb ai/a	A A	65.0 abc	100.0 a	93.8 a	68.8 abc	158.78 ab	11.90 b

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Pest Type	W Weed	W Weed	W Weed	W Weed				
Pest Code	AMBTR	CHEAL	SETFA	AMBTR				
Pest Scientific Name	Ambrosia trifi>	Chenopodium al>	Setaria faberi	Ambrosia trifi>				
Pest Name	Giant ragweed	Common lambsqu>	Giant foxtail	Giant ragweed				
Crop Code					ZEAMD	ZEAMD		
BBCH Scale					BCOR	BCOR		
Crop Scientific Name					Zea mays inden>	Zea mays inden>		
Crop Name					Dent corn	Dent corn		
Crop Variety								
Description								
Rating Date	6-29-2010	6-29-2010	9-9-2010	9-9-2010	9-24-2010	9-24-2010		
Rating Type	CONTRO	CONTRO	CONTRO	CONTRO	YIELD	MOICON		
Rating Unit	%	%	%	%	BU56LB	%		
Number of Subsamples	1	1	1	1	1	1		
Crop Stage Majority								
Pest Stage Majority	6-8"	6-24"	36"	36"				
Pest Density, Unit	5.5 FT2	4 FT2	100 YD2	10 YD2				
Assessed By	WGJ	WGJ						
Trt No.	Rate	Appl Code	15	16	17	18	19	20
Treatment Name	Rate Unit	Appl Code						
12 Resolve (25 SG)	0.24 oz ai/a	A	66.3 abc	100.0 a	75.0 c	75.0 abc	158.33 ab	12.93 ab
Isoxaflutole (75 SG)	0.48 oz ai/a	A						
LSD (P=.05)	27.34	0.00	9.66	19.92	32.921	0.983		
Standard Deviation	18.94	0.00	6.69	13.79	22.800	0.681		
CV	29.04	0.0	8.06	19.25	14.16	5.2		
Bartlett's X2	30.407	0.0	50.734	41.469	15.477	13.556		
P(Bartlett's X2)	0.001*	.	0.001*	0.001*	0.162	0.259		
Replicate F	1.736	0.000	1.809	2.507	1.146	1.478		
Replicate Prob(F)	0.1787	1.0000	0.1647	0.0760	0.3449	0.2385		
Treatment F	8.501	0.000	65.256	14.989	15.321	2.787		
Treatment Prob(F)	0.0001	1.0000	0.0001	0.0001	0.0001	0.0112		