

## Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

01-9B-SOYBEANS

**OBJECTIVE:** To evaluate weed control and weed population shifts over a long period of time in transgenic crops.

**SUMMARY:** There was no difference between Roundup Ultra and Touchdown 5 in “burndown” of little barley, common chickweed, horseweed, giant ragweed, common ragweed, and Pennsylvania smartweed in no-till. Giant foxtail control ranged from 0 to 100% in no-till and 88 to 100% in reduced-till. Prowl provided better control of giant foxtail in reduced-till than in no-till. Tank-mixing Storm and Select reduced giant foxtail control in no-till and reduced-till. Common cocklebur, ivyleaf morningglory, and velvetleaf control was generally greater in no-till compared to reduced-till with all herbicide treatments. In reduced-till, preemergence herbicides provided greater control of velvetleaf compared to postemergence herbicides. Common waterhemp control ranged from 88 to 100%. Authority and Roundup Ultra Max provided the greatest common waterhemp control. Storm caused 20% soybean injury 14 days after treatment with injury decreasing to zero by 28 days after treatment. Despite the injury caused by Storm, Storm did not delay the maturity or height of soybean.

Soybean yield ranged from 2 to 55 bu/A. Soybean yield was related more to the level of weed control than soybean injury.

<b>HERBICIDES / TILLAGES</b>	<b>WEEDS</b>	<b>CROP</b>
AUTHORITY 75 WG	barley, little	soybean
FIRSTRATE 84 WG	chickweed, common	
PROWL 3.3 EC	cocklebur, common	
ROUNDUP ULTRA MAX 3.7 SL	foxtail, giant	
SELECT 2 EC	horseweed	
STORM 4 EC	morningglory, ivyleaf	
TOUCHDOWN 3 SL	ragweed, common	
NO-TILL	ragweed, giant	
REDUCED-TILL	smartweed, Pennsylvania	
	velvetleaf	
	waterhemp, common	

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

## Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

Project Code: 01-9B-SOYBEANS Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA  
 Trial Status: Final Initiation Date: 5-3-01

**Objective:**

To evaluate weed control and weed population shifts over a long period of time in transgenic crops.

Weed Code	Common Name	Scientific Name
1.	HORPU barley, little	Hordeum pusillum Nutt.
2.	AMBTR ragweed, giant	Ambrosia trifida L.
3.	SETFA foxtail, giant	Setaria faberi Herrm.
4.	STEME chickweed, common	Stellaria media (L.) Vill.
5.	ERICA horseweed	Conyza canadensis (L.) Crong.
6.	AMBEL ragweed, common	Ambrosia artemisiifolia L.
7.	XANST cocklebur, common	Xanthium strumarium L.
8.	IPOHE morningglory, ivyleaf	Ipomoea hederacea (L.) Jacq.
9.	ABUTH velvetleaf	Abutilon theophrasti Medicus
10.	AMATA waterhemp, common	Amaranthus rudis Sauer
11.	POLPY smartweed, Pennsylvania	Polygonum pensylvanicum L.

Crop 1: GLXMA soybean Variety: B-T 398CR  
 Planting Method: Seeded Planting Date: 5-14-01  
 Rate: 75 lb/A Depth: 1.0 IN  
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 27 FT Reps: 4  
 Tillage Type: See note Study Design: Split-block  
 Previous Crop, Year: ZEAMX, 2000  
 Field Prep./Maintenance: N 0 LB/A, P205 0 LB/A, K20 90 LB/A

Soil Name: Ebbert % OM: 1.5 pH: 6.7 CEC: 14  
 Texture: Silt loam Fert. Level: P1: 90 LB/A, K: 301 LB/A

**APPLICATION DESCRIPTION**

	A	B	C	D	E	F
Application Date:	5-16-01	6-11-01	6-18-01	6-22-01	6-25-01	6-15-01
Time of Day:	6:00	14:00	20:00	9:00	10:00	11:00
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	2-4"W-1	4-6"W	10DA2-4"	2WA2-4"1	2-4"W-2
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	74 F	90 F	84 F	70 F	78 F	80 F
% Relative Humidity:	70	49	40	72	70	60
Wind Velocity, Unit:	2-3 MPH	5-7 MPH	3-5 MPH	0-2 MPH	0-2 MPH	7 MPH
Soil Moisture:	BELNOR	NORMAL	BELNOR	ABONOR	NORMAL	NORMAL
% Cloud Cover:	10	0	0	0	0	90
	G	H	I			
Application Date:	6-27-01	6-29-01	6-25-01			
Time of Day:	9:00	9:00	10:00			
Application Method:	Spray	Spray	Spray			
Application Timing:	2-4"W-3	2WA2-4"2	10DA2-4"			
Applic. Placement:	BROFOL	BROFOL	BROFOL			
Air Temp., Unit:	70 F	72 F	78 F			
% Relative Humidity:	80	82	70			
Wind Velocity, Unit:	0-2 MPH	1-2 MPH	0-2 MPH			
Soil Moisture:	NORMAL	NORMAL	NORMAL			
% Cloud Cover:	0	0	0			

**CROP STAGE AT EACH APPLICATION**

	A	B	C	D	E	F
Crop 1 Code, Stage:	GLXMA NA	GLXMA V1-V2	GLXMA V3	GLXMA V4	GLXMA V5	GLXMA V2
Height, Unit:	NA IN	3-4 IN	4-6 IN	4-6 IN	5-7 IN	4-5 IN
	G	H	I			
Crop 1 Code, Stage:	GLXMA V5	GLXMA V5	GLXMA V5			
Height, Unit:	5-7 IN	5-8 IN	5-7 IN			

## WEED STAGE AT EACH APPLICATION

	A	B	C	D	E	F
<b>Weed 1 Code:</b>	HORPU	HORPU	HORPU	HORPU	HORPU	HORPU
<b>Stage(leaves):</b>	5-6					
<b>Height(inches):</b>	6-12					
<b>Density:</b>	Medium					
<b>Weed 2 Code:</b>	AMBTR	AMBTR	AMBTR	AMBTR	AMBTR	AMBTR
<b>Stage(leaves):</b>	5-8					
<b>Height(inches):</b>	4-6					
<b>Density:</b>	Low					
<b>Weed 3 Code:</b>	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA
<b>Stage(leaves):</b>	3-4	3-4	4-6	4-6		3-4
<b>Height(inches):</b>	4-8	4-6	5-7	2-4		2-4
<b>Density:</b>	Medium	Medium	High	High		High
<b>Weed 4 Code:</b>	STEME	STEME	STEME	STEME	STEME	STEME
<b>Stage(leaves):</b>	10+					
<b>Height(inches):</b>	4-8					
<b>Density:</b>	Low					
<b>Weed 5 Code:</b>	ERICA	ERICA	ERICA	ERICA	ERICA	ERICA
<b>Stage(leaves):</b>	10+					
<b>Height(inches):</b>	4-8					
<b>Density:</b>	Medium					
<b>Weed 6 Code:</b>	AMBEL	AMBEL	AMBEL	AMBEL	AMBEL	AMBEL
<b>Stage(leaves):</b>	5-8					
<b>Height(inches):</b>	4-6					
<b>Density:</b>	Medium					
<b>Weed 7 Code:</b>	XANST	XANST	XANST	XANST	XANST	XANST
<b>Stage(leaves):</b>	5-6	5-6	5-7		COTL-4	5-6
<b>Height(inches):</b>	4-6	4-6	4-6		1-2	2-4
<b>Density:</b>	Low	Low	Low		Low	Medium
<b>Weed 8 Code:</b>	IPOHE	IPOHE	IPOHE	IPOHE	IPOHE	IPOHE
<b>Stage(leaves):</b>		2-4	4-6	2-4	COTL-4	3-5
<b>Height(inches):</b>		2-4	2-4	1-2	1-2	3-4
<b>Density:</b>		Low	Low	Low	Low	Low
<b>Weed 9 Code:</b>	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
<b>Stage(leaves):</b>					3-5	3-5
<b>Height(inches):</b>					1-3	3-4
<b>Density:</b>					Low	Low
<b>Weed10 Code:</b>	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA
<b>Stage(leaves):</b>	5-6				4-6	
<b>Height(inches):</b>	2-4				1-4	
<b>Density:</b>	Low				Low	
<b>Weed11 Code:</b>	POLPY	POLPY	POLPY	POLPY	POLPY	POLPY
<b>Stage(leaves):</b>		10+				4-6
<b>Height(inches):</b>		4-8				1-3
<b>Density:</b>		Medium				Low
	<b>G</b>	<b>H</b>	<b>I</b>			
<b>Weed 1 Code:</b>	HORPU	HORPU	HORPU			
<b>Stage(leaves):</b>						
<b>Height(inches):</b>						
<b>Density:</b>						
<b>Weed 2 Code:</b>	AMBTR	AMBTR	AMBTR			
<b>Stage(leaves):</b>		6-10				
<b>Height(inches):</b>		5-12				
<b>Density:</b>		Low				

<b>Weed 3 Code:</b>	SETFA	SETFA	SETFA
<b>Stage(leaves):</b>	2-8	2-6	2-6
<b>Height(inches):</b>	2-6	0-3	1-4
<b>Density:</b>	High	Medium	High
<b>Weed 4 Code:</b>	STEME	STEME	STEME
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			
<b>Weed 5 Code:</b>	ERICA	ERICA	ERICA
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			
<b>Weed 6 Code:</b>	AMBEL	AMBEL	AMBEL
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			
<b>Weed 7 Code:</b>	XANST	XANST	XANST
<b>Stage(leaves):</b>	4-6		
<b>Height(inches):</b>	2-4		
<b>Density:</b>	Low		
<b>Weed 8 Code:</b>	IPOHE	IPOHE	IPOHE
<b>Stage(leaves):</b>		COTL-4	COTL-4
<b>Height(inches):</b>		0-1	1-2
<b>Density:</b>		Low	Low
<b>Weed 9 Code:</b>	ABUTH	ABUTH	ABUTH
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			
<b>Weed10 Code:</b>	AMATA	AMATA	AMATA
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			
<b>Weed11 Code:</b>	POLPY	POLPY	POLPY
<b>Stage(leaves):</b>			
<b>Height(inches):</b>			
<b>Density:</b>			

## APPLICATION EQUIPMENT

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>
<b>Appl. Equipment:</b>	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
<b>Operating Pressure:</b>	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
<b>Nozzle Type:</b>	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
<b>Nozzle Size:</b>	8003	8002	8002	8002	8002	8002
<b>Boom Length, Unit:</b>	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT
<b>Spray Volume, Unit:</b>	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA

	<b>G</b>	<b>H</b>	<b>I</b>
<b>Appl. Equipment:</b>	CO2 sprayer	CO2 sprayer	CO2 sprayer
<b>Operating Pressure:</b>	40 PSI	40 PSI	40 PSI
<b>Nozzle Type:</b>	Flat fan	Flat fan	Flat fan
<b>Nozzle Size:</b>	8002	8002	8002
<b>Boom Length, Unit:</b>	7.5 FT	7.5 FT	7.5 FT
<b>Spray Volume, Unit:</b>	20 GPA	20 GPA	20 GPA

## NOTES: HARVESTED 10-27-01, 2 ROWS X 24 FT.

Tillages are no-till and reduced-till, see treatment list.

Application "D", treatment 20 only, application "I", treatment 10 only.

Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

Project Code: 01-9B-SOYBEANS Location: Belleville Research Center

Weed Code		Crop Code		Rating Data Type		Rating Unit		Rating Date		Trt-Eval Interval		SETFA	HORPU	AMBTR	STEME	ERICA	AMBEL	POLPY	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
				Control		Control		Control		Control		Control	Control	Control	Control	Control	Control	Control	Injury	Injury	Injury	STARED	STARED	STARED
				Percent		Percent		Percent		Percent		Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
				5-26-01		5-26-01		5-26-01		5-26-01		5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code															
1	SOYBEAN IN 2001									0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NO-TILL																							
1	NONTREATED																							
2	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
2	NO-TILL																							
2	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
2	HANDWEED																							
3	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
3	NO-TILL																							
3	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
3	PROWL	3.3	EC	1.0	LB A/A	2.4	PT/A	PRE	A															
3	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A															
3	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A															
4	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
4	NO-TILL																							
4	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
4	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A															
4	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A															
4	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2-4"W-3	G															
5	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
5	NO-TILL																							
5	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
5	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A															
5	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A															
5	SELECT	2	EC	0.094	LB A/A	6.0	OZ/A	2-4"W-3	G															
5	PRIME OIL COC	100	LIQ	1.0	% V/V	1.0	% V/V	2-4"W-3	G															
6	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
6	NO-TILL																							
6	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
6	PROWL	3.3	EC	1.0	LB A/A	2.4	PT/A	PRE	A															
6	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	4-6"W	C															
7	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
7	NO-TILL																							
7	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A															
7	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2-4"W-2	F															
7	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2WA2-4"2	H															
8	SOYBEAN IN 2001									100	100	100	100	100	100	100	100	90	0	0	0	0	0	0
8	NO-TILL																							
8	TOUCHDOWN	3	SL	0.75	LB AE/A	2	PT/A	PRE	A															
8	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	4-6"W	C															

Weed Code		SETFA HORPU AMBTR STEME ERICA AMBEL POLPY																			
Crop Code																					
Rating Data Type																					
Rating Unit																					
Rating Date																					
Tri-Eval Interval																					
		Control	Control	Control	Control	Control	Control	Control	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA							
		Percent	Percent	Percent	Percent	Percent	Percent	Percent	Injury	Injury	Injury	STARED	STARED	STARED							
		5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	Percent	Percent	Percent	Percent	Percent	Percent							
		10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT							
Tri	Treatment	Form	Form	Rate	Prod	Prod	Grow	Appl													
No.	Name	Conc	Type	Unit	Rate	Unit	Stg	Code													
9	SOYBEAN IN 2001								100	100	100	100	100	100	90	20	0	0	0	0	0
9	NO-TILL																				
9	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A													
9	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F													
9	SELECT	2	EC	0.125 LB A/A	8.0	OZ/A	2-4"W-2	F													
9	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F													
9	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F													
10	SOYBEAN IN 2001								100	100	100	100	100	100	90	20	0	0	0	0	0
10	NO-TILL																				
10	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A													
10	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F													
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F													
10	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F													
10	SELECT	2	EC	0.094 LB A/A	6	OZ/A	10DA2-4"	I													
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	10DA2-4"	I													
11	SOYBEAN IN 2001															0	0	0	0	0	0
11	REDUCED-TILL																				
11	NONTREATED																				
12	SOYBEAN IN 2001															0	0	0	0	0	0
12	REDUCED-TILL																				
12	HANDWEED																				
13	SOYBEAN IN 2001															0	0	0	0	0	0
13	REDUCED-TILL																				
13	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A													
13	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A													
13	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A													
14	SOYBEAN IN 2001															0	0	0	0	0	0
14	REDUCED-TILL																				
14	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A													
14	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A													
14	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-3	G													
15	SOYBEAN IN 2001															0	0	0	0	0	0
15	REDUCED-TILL																				
15	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A													
15	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A													
15	SELECT	2	EC	0.094 LB A/A	6	OZ/A	2-4"W-3	G													
15	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-3	G													
16	SOYBEAN IN 2001															0	0	0	0	0	0
16	REDUCED-TILL																				
16	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A													
16	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C													
17	SOYBEAN IN 2001															0	0	0	0	0	0
17	REDUCED-TILL																				
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-1	B													
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2WA2-4"1	E													
18	SOYBEAN IN 2001															0	0	0	0	0	0
18	REDUCED-TILL																				
18	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C													

Weed Code	SETFA	HORPU	AMBTR	STEME	ERICA	AMBEL	POLPY	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA		
Crop Code	Control	Control	Control	Control	Control	Control	Control	Injury	Injury	Injury	STARED	STARED	STARED		
Rating Data Type	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Rating Unit	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01	5-26-01		
Rating Date	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT		
Trt-Eval Interval	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	10 DA-A	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
19	SOYBEAN IN 2001														
19	REDUCED-TILL														
19	STORM	4	EC	0.75	LB A/A	1.5	PT/A	2-4"W-1	B						
19	SELECT	2	EC	0.125	LB A/A	8.0	OZ/A	2-4"W-1	B						
19	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	2-4"W-1	B						
19	28% UAN	100	LIQ	2.0	QT/A	2	QT/A	2-4"W-1	B						
20	SOYBEAN IN 2001														
20	REDUCED-TILL														
20	STORM	4	EC	0.75	LB A/A	1.5	PT/A	2-4"W-1	B						
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	2-4"W-1	B						
20	28% UAN	100	LIQ	2.0	QT/A	2	QT/A	2-4"W-1	B						
20	SELECT	2	EC	0.094	LB A/A	6	OZ/A	10DA2-4"	D						
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	10DA2-4"	D						
LSD (P=.05)				0.0		0.0				0.0		0.0		0.0	
Replicate F				0.000		0.000				0.000		0.000		0.000	
Replicate Prob(F)				1.0000		1.0000				1.0000		1.0000		1.0000	
Treatment F				0.000		0.000				0.000		0.000		0.000	
Treatment Prob(F)				1.0000		1.0000				1.0000		1.0000		1.0000	

Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

Project Code: 01-9B-SOYBEANS Location: Belleville Research Center

Weed Code		SETFA Control		SETFA Control		SETFA Control		XANST Control		XANST Control		XANST Control		IPOHE Control		IPOHE Control		IPOHE Control		ABUTH Control		ABUTH Control		ABUTH Control		AMATA Control		AMATA Control		AMATA Control	
Rating Data Type	Rating Unit	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code																							
1	SOYBEAN IN 2001								0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	NO-TILL																														
1	NONTREATED																														
2	SOYBEAN IN 2001								100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2	NO-TILL																														
2	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
2	HANDWEED																														
3	SOYBEAN IN 2001								98	95	57	100	100	98	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	97	
3	NO-TILL																														
3	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
3	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A																							
3	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A																							
3	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A																							
4	SOYBEAN IN 2001								100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
4	NO-TILL																														
4	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
4	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A																							
4	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A																							
4	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-3	G																							
5	SOYBEAN IN 2001								100	100	100	96	96	96	99	99	99	100	100	100	100	100	100	97	96	96	96	96	96	96	
5	NO-TILL																														
5	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
5	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A																							
5	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A																							
5	SELECT	2	EC	0.094 LB A/A	6.0	OZ/A	2-4"W-3	G																							
5	PRIME OIL COC	100	LIQ	1.0 % V/V	1.0	% V/V	2-4"W-3	G																							
6	SOYBEAN IN 2001								95	91	91	98	99	99	98	100	100	98	99	99	99	98	91	91	91	91	91	91	91	91	
6	NO-TILL																														
6	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
6	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A																							
6	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C																							
7	SOYBEAN IN 2001								88	91	91	98	100	100	95	100	100	95	100	100	100	100	100	100	100	100	100	100	100	100	
7	NO-TILL																														
7	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
7	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-2	F																							
7	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2WA2-4"2	H																							
8	SOYBEAN IN 2001								90	86	86	100	100	100	100	100	100	100	99	99	100	100	100	100	100	100	100	100	100	100	
8	NO-TILL																														
8	TOUCHDOWN	3	SL	0.75 LB AE/A	2	PT/A	PRE	A																							
8	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C																							
9	SOYBEAN IN 2001								83	0	0	100	100	100	98	95	95	100	100	100	100	100	100	98	98	98	98	98	98	98	
9	NO-TILL																														
9	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A																							
9	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F																							
9	SELECT	2	EC	0.125 LB A/A	8.0	OZ/A	2-4"W-2	F																							
9	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F																							
9	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F																							



Weed Code	Rating Data Type	Rating Unit	Trt-Eval Interval	SETFA Control	SETFA Control	SETFA Control	XANST Control	XANST Control	XANST Control	IPOHE Control	IPOHE Control	IPOHE Control	ABUTH Control	ABUTH Control	ABUTH Control	AMATA Control	AMATA Control	AMATA Control					
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT			
10	SOYBEAN IN 2001								83	93	93	98	98	98	100	100	100	100	100	100	90	90	
10	NO-TILL																						
10	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A															
10	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F															
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F															
10	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F															
10	SELECT	2	EC	0.094 LB A/A	6	OZ/A	10DA2-4"	I															
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	10DA2-4"	I															
11	SOYBEAN IN 2001								0	0	0	0	0	0	0	25	0	0	0	0	0	0	
11	REDUCED-TILL																						
11	NONTREATED																						
12	SOYBEAN IN 2001								100	100	100	100	100	100	100	100	100	100	100	100	100	100	
12	REDUCED-TILL																						
12	HANDWEED																						
13	SOYBEAN IN 2001								100	100	90	98	100	91	100	100	100	100	100	100	100	100	
13	REDUCED-TILL																						
13	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A															
13	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A															
13	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A															
14	SOYBEAN IN 2001								100	100	100	100	100	100	100	100	100	100	100	100	100	100	
14	REDUCED-TILL																						
14	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A															
14	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A															
14	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-3	G															
15	SOYBEAN IN 2001								100	100	100	93	95	95	100	100	100	100	100	100	96	98	98
15	REDUCED-TILL																						
15	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A															
15	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A															
15	SELECT	2	EC	0.094 LB A/A	6	OZ/A	2-4"W-3	G															
15	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-3	G															
16	SOYBEAN IN 2001								100	100	100	100	100	100	92	91	91	85	65	65	100	90	90
16	REDUCED-TILL																						
16	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A															
16	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C															
17	SOYBEAN IN 2001								100	100	100	100	98	98	89	90	90	89	96	96	98	98	98
17	REDUCED-TILL																						
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-1	B															
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2WA2-4"1	E															
18	SOYBEAN IN 2001								100	98	98	100	100	100	90	86	86	78	50	50	98	93	93
18	REDUCED-TILL																						
18	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C															
19	SOYBEAN IN 2001								98	88	88	98	89	89	93	85	85	95	88	88	100	88	88
19	REDUCED-TILL																						
19	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-1	B															
19	SELECT	2	EC	0.125 LB A/A	8.0	OZ/A	2-4"W-1	B															
19	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-1	B															
19	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-1	B															

Weed Code								SETFA	SETFA	SETFA	XANST	XANST	XANST	IPOHE	IPOHE	IPOHE	ABUTH	ABUTH	ABUTH	AMATA	AMATA	AMATA		
Rating Data Type								Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	
Rating Unit								Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Trt-Eval Interval								14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT	14 DAT	28 DAT	56 DAT		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code															
20	SOYBEAN IN 2001									0	100	100	100	89	89	93	88	88	94	89	89	100	88	88
20	REDUCED-TILL																							
20	STORM	4	EC	0.75	LB A/A	1.5	PT/A	2-4"W-1	B															
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	2-4"W-1	B															
20	28% UAN	100	LIQ	2.0	QT/A	2	QT/A	2-4"W-1	B															
20	SELECT	2	EC	0.094	LB A/A	6	OZ/A	10DA2-4"	D															
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	10DA2-4"	D															
	LSD (P=.05)									3.8	5.3	14.4	4.2	4.0	4.4	3.7	16.1	3.5	3.9	17.7	17.7	3.1	4.0	4.3
	Replicate F									1.000	2.197	1.338	3.448	1.887	1.548	2.171	1.318	2.136	1.873	1.234	1.234	0.995	1.111	1.304
	Replicate Prob(F)									0.3995	0.0983	0.2710	0.0224	0.1420	0.2120	0.1014	0.2775	0.1056	0.1444	0.3057	0.3057	0.4020	0.3523	0.2820
	Treatment F									717.873	368.498	49.503	413.614	453.910	372.846	527.408	21.934	598.099	469.868	25.510	25.510	760.795	446.937	393.761
	Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

Project Code: 01-9B-SOYBEANS Location: Belleville Research Center

Weed Code								GLXMA	GLXMA	GLXMA
Crop Code								Height	Maturity	Yield
Rating Data Type								Inches	DAP	bu/A
Rating Unit								9-24-01		10-27-01
Rating Date								EOS		
Trt-Eval Interval										
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	
1	SOYBEAN IN 2001									35 133 8
1	NO-TILL									
1	NONTREATED									
2	SOYBEAN IN 2001									41 133 48
2	NO-TILL									
2	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
2	HANDWEED									
3	SOYBEAN IN 2001									39 133 35
3	NO-TILL									
3	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
3	PROWL	3.3	EC	1.0	LB A/A	2.4	PT/A	PRE	A	
3	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A	
3	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A	
4	SOYBEAN IN 2001									40 133 51
4	NO-TILL									
4	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
4	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A	
4	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A	
4	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2-4"W-3	G	
5	SOYBEAN IN 2001									41 133 49
5	NO-TILL									
5	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
5	AUTHORITY	75	WG	0.25	LB A/A	5.3	OZ/A	PRE	A	
5	FIRSTRATE	84	WG	0.031	LB A/A	0.59	OZ/A	PRE	A	
5	SELECT	2	EC	0.094	LB A/A	6.0	OZ/A	2-4"W-3	G	
5	PRIME OIL COC	100	LIQ	1.0	% V/V	1.0	% V/V	2-4"W-3	G	
6	SOYBEAN IN 2001									42 133 42
6	NO-TILL									
6	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
6	PROWL	3.3	EC	1.0	LB A/A	2.4	PT/A	PRE	A	
6	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	4-6"W	C	
7	SOYBEAN IN 2001									41 133 44
7	NO-TILL									
7	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	PRE	A	
7	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2-4"W-2	F	
7	ROUNDUP ULTRA MAX	3.7	SL	0.56	LB AE/A	1.2	PT/A	2WA2-4"2	H	
8	SOYBEAN IN 2001									41 133 43
8	NO-TILL									
8	TOUCHDOWN	3	SL	0.75	LB AE/A	2	PT/A	PRE	A	
8	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	4-6"W	C	

Weed Code  
 Crop Code  
 Rating Data Type  
 Rating Unit  
 Rating Date  
 Tri-Eval Interval

GLXMA GLXMA GLXMA  
 Height Maturity Yield  
 Inches DAP bu/A  
 9-24-01 10-27-01  
 EOS

Tri No.	Treatment Name	Form Conc	Form Type	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code			
9	SOYBEAN IN 2001								41	133	27
9	NO-TILL										
9	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A			
9	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F			
9	SELECT	2	EC	0.125 LB A/A	8.0	OZ/A	2-4"W-2	F			
9	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F			
9	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F			
10	SOYBEAN IN 2001								41	133	43
10	NO-TILL										
10	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	PRE	A			
10	STORM	4	EC	0.75 LB A/A	1.5	PT/A	2-4"W-2	F			
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-2	F			
10	28% UAN	100	LIQ	2.0 QT/A	2	QT/A	2-4"W-2	F			
10	SELECT	2	EC	0.094 LB A/A	6	OZ/A	10DA2-4"	I			
10	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	10DA2-4"	I			
11	SOYBEAN IN 2001								33	133	2
11	REDUCED-TILL										
11	NONTREATED										
12	SOYBEAN IN 2001								40	133	41
12	REDUCED-TILL										
12	HANDWEED										
13	SOYBEAN IN 2001								41	133	45
13	REDUCED-TILL										
13	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A			
13	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A			
13	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A			
14	SOYBEAN IN 2001								42	133	52
14	REDUCED-TILL										
14	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A			
14	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A			
14	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-3	G			
15	SOYBEAN IN 2001								42	133	53
15	REDUCED-TILL										
15	AUTHORITY	75	WG	0.25 LB A/A	5.3	OZ/A	PRE	A			
15	FIRSTRATE	84	WG	0.031 LB A/A	0.59	OZ/A	PRE	A			
15	SELECT	2	EC	0.094 LB A/A	6	OZ/A	2-4"W-3	G			
15	PRIME OIL COC	100	LIQ	1.0 % V/V	1	% V/V	2-4"W-3	G			
16	SOYBEAN IN 2001								41	133	50
16	REDUCED-TILL										
16	PROWL	3.3	EC	1.0 LB A/A	2.4	PT/A	PRE	A			
16	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C			
17	SOYBEAN IN 2001								41	133	55
17	REDUCED-TILL										
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2-4"W-1	B			
17	ROUNDUP ULTRA MAX	3.7	SL	0.56 LB AE/A	1.2	PT/A	2WA2-4"1	E			
18	SOYBEAN IN 2001								40	133	46
18	REDUCED-TILL										
18	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	1.6	PT/A	4-6"W	C			

Weed Code  
 Crop Code  
 Rating Data Type  
 Rating Unit  
 Rating Date  
 Trt-Eval Interval

GLXMA GLXMA GLXMA  
 Height Maturity Yield  
 Inches DAP bu/A  
 9-24-01 10-27-01  
 EOS

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code			
19	SOYBEAN IN 2001									42	133	43
19	REDUCED-TILL											
19	STORM	4	EC	0.75	LB A/A	1.5	PT/A	2-4"W-1	B			
19	SELECT	2	EC	0.125	LB A/A	8.0	OZ/A	2-4"W-1	B			
19	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	2-4"W-1	B			
19	28% UAN	100	LIQ	2.0	QT/A	2	QT/A	2-4"W-1	B			
20	SOYBEAN IN 2001									42	133	40
20	REDUCED-TILL											
20	STORM	4	EC	0.75	LB A/A	1.5	PT/A	2-4"W-1	B			
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	2-4"W-1	B			
20	28% UAN	100	LIQ	2.0	QT/A	2	QT/A	2-4"W-1	B			
20	SELECT	2	EC	0.094	LB A/A	6	OZ/A	10DA2-4"	D			
20	PRIME OIL COC	100	LIQ	1.0	% V/V	1	% V/V	10DA2-4"	D			
	LSD (P=.05)									3.0	0.0	10.1
	Replicate F									0.422	0.000	0.727
	Replicate Prob(F)									0.7381	1.0000	0.5402
	Treatment F									4.317	0.000	15.009
	Treatment Prob(F)									0.0001	1.0000	0.0001

Long-Term Tillage by Herbicide Study in a Transgenic Corn and Soybean Rotation.

Project Code: 01-9B-SOYBEANS Location: Belleville Research Center

#### Trial Comments

1. Protocol: SIU - RFK. Study conducted since 1998 on same area.
2. DAT = days after treatment. DA-A = days after PRE (burndown) application. STARED = stand reduction.  
14 days after PRE, 2-4"W-1, 2-4"W-2, 4-6"W and 2-4"W-3 applications was on 5-30-01, 6-25-01, 6-29-01, 7-2-01 and 7-11-01, respectively.  
28 days after PRE, 2-4"W-1, 2-4"W-2, 4-6"W and 2-4"W-3 applications was on 6-13-01, 7-9-01, 7-13-01, 7-16-01 and 7-25-01, respectively.  
56 days after PRE, 2-4"W-1, 2-4"W-2, 4-6"W and 2-4"W-3 applications was on 7-11-01, 8-6-01, 8-10-01, 8-9-01 and 8-22-01, respectively.