

Callisto Preemergence and Postemergence in Conventional-Till Corn.

01-10B-ME60

OBJECTIVE: Evaluate various weed management programs containing Callisto compared to commercial standards.

SUMMARY: No corn injury was observed from preemergence (PRE) herbicides. However, corn injury in the form of stunting and brace root malformation was observed from Marksman, Northstar, and Distinct at each evaluation timing.

All herbicide treatments controlled at least 93% of giant foxtail, yellow nutsedge, common ragweed, pitted morningglory, and waterhemp at 42 days after the postemergence application (DAPO). Common cocklebur and velvetleaf control was slightly less from Dual II Magnum plus Callisto preemergence (PRE) and Bicep II Magnum PRE compared to other herbicide treatments. Control of common cocklebur and common ragweed were slightly higher when Callisto was applied postemergence compared to PRE.

Corn yield ranged from 181 bu/A in nontreated plots to 233 bu/A. Corn yield in plots treated with Callisto programs yielded equal to or greater than the commercial standards.

HERBICIDES

AATREX 90 WG
 BICEP II MAGNUM 5.5 L
 CALLISTO 4 SC
 DISTINCT 70 WG
 DUAL II MAGNUM 7.64 EC
 MARKSMAN 3.2 L
 NORTHSTAR 47.4 WG
 OUTLOOK 6 EC

WEEDS

cocklebur, common
 foxtail, giant
 morningglory, pitted
 nutsedge, yellow
 ragweed, common
 velvetleaf
 waterhemp, common

CROP

corn, field

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Callisto Preemergence and Postemergence in Conventional-Till Corn.

Project Code: 01-10B-ME60 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: 4-19-01

Objective:

Evaluate various weed management programs containing Callisto compared to commercial standards.

Weed Code	Common Name	Scientific Name
1. SETFA	foxtail, giant	Setaria faberi Herrm.
2. CYPES	nutsedge, yellow	Cyperus esculentus L.
3. XANST	cocklebur, common	Xanthium strumarium L.
4. ABUTH	velvetleaf	Abutilon theophrasti Medicus
5. AMBEL	ragweed, common	Ambrosia artemisiifolia L.
6. IPOLA	morningglory, pitted	Ipomoea lacunosa L.
7. AMATA	waterhemp, common	Amaranthus rudis Sauer

Crop 1: ZEAMX corn, field Variety: P33G28 LL
 Planting Method: Seeded Planting Date: 5-8-01
 Rate: 28000 S/A Depth: 1.5 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 24 FT Reps: 3
 Tillage Type: Reduced-Till Study Design: Randomized complete block
 Previous Crop, Year: GLXMA, 2000
 Field Prep./Maintenance: N 150 LB/A, P205 0 LB/A, K20 150 LB/A

Soil Name: Weir % OM: 1.6 pH: 6.3 CEC: 12
 Texture: Silt loam Fert. Level: P1: 82 LB/A, K: 274 LB/A

APPLICATION DESCRIPTION

	A	B
Application Date:	5-9-01	6-5-01
Time of Day:	11:00	11:30
Application Method:	Spray	Spray
Application Timing:	PRE	3-5"W
Applic. Placement:	BROS0I	BROFOL
Air Temp., Unit:	78 F	84 F
% Relative Humidity:	34	60
Wind Velocity, Unit:	3 MPH	5-10 MPH
Soil Moisture:	BELNOR	NORMAL

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX V4
Height, Unit:	NA NA	8-10 IN

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code:	SETFA	SETFA
Stage(leaves):		3-4
Height(inches):		3-4
Density:		Medium
Weed 2 Code:	CYPES	CYPES
Stage(leaves):		5-7
Height(inches):		4-8
Density:		Low
Weed 3 Code:	XANST	XANST
Stage(leaves):		4-6
Height(inches):		2-5
Density:		Medium

Weed 4 Code:	ABUTH	ABUTH
Stage(leaves):		1-5
Height(inches):		2-5
Density:		Low
Weed 5 Code:	AMBEL	AMBEL
Weed 6 Code:	IPOLA	IPOLA
Weed 7 Code:	AMATA	AMATA

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan
Nozzle Size:	8003	8002
Boom Length, Unit:	7.5 FT	7.5 FT
Spray Volume, Unit:	20 GPA	20 GPA

NOTES: HARVESTED 10-1-01, 2 ROWS X 21 FT.

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Weed Code																SETFA	SETFA	SETFA	SETFA	CYPES	CYPES	CYPES	CYPES
Crop Code																ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
Rating Data Type																Yield	Injury	Injury	Injury	Injury	Injury	Injury	Injury
Rating Unit																bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date																10-1-01	5-21-01	5-28-01	6-12-01	6-19-01	7-3-01	7-17-01	6-5-01
Trt-Eval Interval																7 DAE	14 DAE	7 DA-B	14 DA-B	28 DA-B	42 DA-B	0 DA-B	14 DA-B
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code														
1	NONTREATED									181	0	0	0	0	0	0	0	0	0	0			
2	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	225	0	0	0	0	0	99	99	96	94	83			
2	CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A											98			
3	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	220	0	0	0	0	0	99	99	97	97	98			
3	CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A											98			
3	AATREX	90	WG	1.0	LB A/A	1.1	LB/A	PRE	A											98			
4	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	218	0	0	0	0	0	99	99	99	99	68			
5	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	233	0	0	0	0	0	99	99	96	96	73			
5	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B											93			
5	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B											96			
5	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B											96			
6	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	215	0	0	0	0	0	99	99	99	98	70			
6	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B											98			
6	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B											98			
6	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B											98			
7	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	216	0	0	3	0	0	99	99	96	96	92			
7	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B											98			
7	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	3-5"W	B											98			
7	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B											95			
7	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B											95			
8	OUTLOOK	6	EC	0.84	LB A/A	18	OZ/A	PRE	A	225	0	0	40	23	7	5	99	99	98	97			
8	MARKSMAN	3.2	L	1.4	LB A/A	3.5	PT/A	3-5"W	B											88			
9	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	211	0	0	47	23	20	5	99	99	96	96			
9	NORTHSTAR	47.4	WG	0.1481	LB A/A	5	OZ/A	3-5"W	B											13			
9	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B											93			
9	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B											95			
10	OUTLOOK	6	EC	0.75	LB A/A	16	OZ/A	PRE	A	215	0	0	43	27	5	3	99	99	99	99			
10	DISTINCT	70	WG	0.263	LB A/A	6	OZ/A	3-5"W	B											92			
10	ACTIVATOR 90	100	LIQ	0.25	% V/V	0.25	%V/V	3-5"W	B											95			
10	AMS	100	DRY	0.6	% W/W	5	LB/100 GAL	3-5"W	B											95			
LSD (P=.05)										17.2	0.0	0.0	9.2	5.0	14.0	1.6	0.0	0.0	3.9	5.0			
Replicate F										0.818	0.000	0.000	1.519	2.739	1.250	1.000	0.000	0.000	0.912	1.819			
Replicate Prob(F)										0.4570	1.0000	1.0000	0.2456	0.0915	0.3102	0.3874	1.0000	1.0000	0.4193	0.1908			
Treatment F										5.544	0.000	0.000	45.455	49.391	1.846	17.333	0.000	0.000	561.488	329.298			
Treatment Prob(F)										0.0010	1.0000	1.0000	0.0001	0.0001	0.1283	0.0001	1.0000	1.0000	0.0001	0.0001			

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Weed Code								XANST	XANST	XANST	XANST	ABUTH	ABUTH	ABUTH	ABUTH	AMBEL	AMBEL	AMBEL		
Crop Code								Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control		
Rating Data Type								Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent		
Rating Unit								6-5-01	6-19-01	7-3-01	7-17-01	6-5-01	6-19-01	7-3-01	7-17-01	6-19-01	7-3-01	7-17-01		
Rating Date								0 DA-B	14 DA-B	28 DA-B	42 DA-B	0 DA-B	14 DA-B	28 DA-B	42 DA-B	14 DA-B	28 DA-B	42 DA-B		
Trt-Eval Interval																				
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code											
1	NONTREATED									0	0	0	0	0	0	0	0	0		
2	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	73	87	90	89	94	94	95	95	95	93	93
	2 CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A											
3	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	93	95	96	96	99	99	98	99	99	99	99
	3 CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A											
	3 AATREX	90	WG	1.0	LB A/A	1.1	LB/A	PRE	A											
4	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	82	92	91	91	96	94	90	90	99	99	99
5	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	99	99	98	0	99	98	97	99	99	99
	5 CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"	W B											
	5 PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"	W B											
	5 28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"	W B											
6	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	92	99	99	98	95	99	99	99	99	99	99
	6 CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"	W B											
	6 PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"	W B											
	6 28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"	W B											
7	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	99	96	98	0	99	99	99	99	99	99
	7 CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"	W B											
	7 AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	3-5"	W B											
	7 PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"	W B											
	7 28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"	W B											
8	OUTLOOK	6	EC	0.84	LB A/A	18	OZ/A	PRE	A	0	99	99	99	0	99	99	99	99	99	99
	8 MARKSMAN	3.2	L	1.4	LB A/A	3.5	PT/A	3-5"	W B											
9	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	99	99	99	0	99	99	99	99	99	99
	9 NORTHSTAR	47.4	WG	0.1481	LB A/A	5	OZ/A	3-5"	W B											
	9 PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"	W B											
	9 28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"	W B											
10	OUTLOOK	6	EC	0.75	LB A/A	16	OZ/A	PRE	A	0	99	99	99	30	98	99	98	99	99	99
	10 DISTINCT	70	WG	0.263	LB A/A	6	OZ/A	3-5"	W B											
	10 ACTIVATOR 90	100	LIQ	0.25	% V/V	0.25	%V/V	3-5"	W B											
	10 AMS	100	DRY	0.6	% W/W	5	LB/100 GAL	3-5"	W B											
LSD (P=.05)										10.0	6.9	6.6	6.8	28.2	4.7	2.9	3.3	2.4	1.6	1.6
Replicate F										0.000	1.014	0.188	0.362	1.079	1.849	1.888	0.436	1.000	1.446	1.446
Replicate Prob(F)										1.0000	0.3827	0.8304	0.7013	0.3608	0.1860	0.1802	0.6531	0.3874	0.2615	0.2615
Treatment F										171.254	174.027	189.276	177.975	25.566	379.930	994.471	762.454	1434.754	3507.879	3507.879
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

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Weed Code	IPOLA	IPOLA	IPOLA	IPOLA	AMATA	AMATA	AMATA	AMATA
Crop Code								
Rating Data Type								
Rating Unit	Control	Control	Control	Control	Control	Control	Control	Control
Rating Date	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Trt-Eval Interval	6-5-01	6-19-01	7-3-01	7-17-01	6-5-01	6-19-01	7-3-01	7-17-01
	0 DA-B	14 DA-B	28 DA-B	42 DA-B	0 DA-B	14 DA-B	28 DA-B	42 DA-B

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	IPOLA	IPOLA	IPOLA	IPOLA	AMATA	AMATA	AMATA	AMATA
1	NONTREATED									0	0	0	0	0	0	0	0
2	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	65	91	96	95	99	99	99	99
2	CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A								
3	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	99	99	99	99	99	99	99	99
3	CALLISTO	4	SC	0.188	LB A/A	6	OZ/A	PRE	A								
3	AATREX	90	WG	1.0	LB A/A	1.1	LB/A	PRE	A								
4	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	99	97	98	96	98	99	99	99
5	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	96	92	94	99	99	99	99
5	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B								
5	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B								
5	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B								
6	BICEP II MAGNUM	5.5	L	2.89	LB A/A	2.1	QT/A	PRE	A	99	96	98	98	99	99	99	99
6	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B								
6	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B								
6	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B								
7	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	99	97	97	99	99	99	99
7	CALLISTO	4	SC	0.094	LB A/A	3	OZ/A	3-5"W	B								
7	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	3-5"W	B								
7	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B								
7	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B								
8	OUTLOOK	6	EC	0.84	LB A/A	18	OZ/A	PRE	A	0	99	99	99	99	99	99	99
8	MARKSMAN	3.2	L	1.4	LB A/A	3.5	PT/A	3-5"W	B								
9	DUAL II MAGNUM	7.64	EC	1.59	LB A/A	1.66	PT/A	PRE	A	0	87	99	99	99	99	99	99
9	NORTHSTAR	47.4	WG	0.1481	LB A/A	5	OZ/A	3-5"W	B								
9	PRIME OIL COC	100	LIQ	1.0	% V/V	1	%V/V	3-5"W	B								
9	28% UAN	100	LIQ	2.5	% V/V	2.5	%V/V	3-5"W	B								
10	OUTLOOK	6	EC	0.75	LB A/A	16	OZ/A	PRE	A	0	95	99	99	99	99	99	99
10	DISTINCT	70	WG	0.263	LB A/A	6	OZ/A	3-5"W	B								
10	ACTIVATOR 90	100	LIQ	0.25	% V/V	0.25	%V/V	3-5"W	B								
10	AMS	100	DRY	0.6	% W/W	5	LB/100 GAL	3-5"W	B								
LSD (P=.05)										21.5	9.1	3.9	4.5	0.6	0.0	0.0	0.0
Replicate F										1.000	1.608	0.773	1.775	1.000	0.000	0.000	0.000
Replicate Prob(F)										0.3874	0.2277	0.4764	0.1979	0.3874	1.0000	1.0000	1.0000
Treatment F										43.436	97.912	546.970	416.750	22020.250	0.000	0.000	0.000
Treatment Prob(F)										0.0001	0.0001	0.0001	0.0001	0.0001	1.0000	1.0000	1.0000

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Trial Comments

1. Protocol: Syngenta (27753A).
2. DAE = days after emergence. DA-B = days after 3-5"W application. Weed control ratings on 6-5-01 were prior to postemergence application and 27 days after the PRE application.
3. On 6-12-01 crop injury was stunting, on 6-19-01 crop injury was stunting and brace root malformation.