

Evaluation of PCC 1164 Applied Preplant in No-Till Corn.

01-1-EE60

OBJECTIVE: Determine the weed control provided by PCC 1164 applied preplant in corn as a possible atrazine replacement.

SUMMARY: No corn injury was observed in this study. All treatments controlled at least 89% of marehail and 97% of common lambsquarters at 28 days after planting (DAP). Giant foxtail and common waterhemp control was poor from treatments applied 45 days early preplant (EPP). Treatments applied 30 or 15 EPP provided the greatest giant foxtail control. However, waterhemp control was greatest from treatments that included PCC 1164 applied 1 day before planting.

Corn yield ranged from 32 bu/A in nontreated plots to 185 bu/A. Corn yield was greater when PCC 1164 was applied 30 EPP compared to 45 EPP. Tank mixing Balance Pro plus Dual II Magnum with PCC 1164 resulted in greater corn yield compared to Aatrex plus Dual II Magnum.

HERBICIDES

AATREX 90 WG
 BALANCE PRO 4 SC
 BICEP II MAGNUM 5.5 L
 DUAL II MAGNUM 7.64 EC
 HORNET 68.5 WG
 PCC 1164 70 WG
 ROUNDUP ULTRA MAX 3.7 SL

WEEDS

foxtail, giant
 garlic, wild
 horseweed
 lambsquarters, common
 waterhemp, common

CROP

corn, field

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Evaluation of PCC 1164 Applied Preplant in No-Till Corn.

Project Code: 01-1-EE60 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: 3-23-01**Objective:**

Determine the weed control provided by PCC 1164 applied preplant in corn as a possible atrazine replacement.

Weed Code	Common Name	Scientific Name
1. ALLVI	garlic, wild	Allium vineale L.
2. ERICA	horseweed	Conyza canadensis (L.) Crong.
3. SETFA	foxtail, giant	Setaria faberi Herrm.
4. AMATA	waterhemp, common	Amaranthus rudis Sauer
5. CHEAL	lambsquarters, common	Chenopodium album L.

Crop 1:	ZEAMX	corn, field	Variety:	P33G28 LL
Planting Method:	Seeded		Planting Date:	5-10-01
Rate:	28000	S/A	Depth:	1.5 IN
Row Spacing:	30	IN		

Plot Width, Unit:	10	FT	Plot Length, Unit:	31	FT	Reps:	3
Tillage Type:	No-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:	2.0	pH:	6.7	CEC:	10
Texture:	Silt loam	Fert. Level:	P1: 109 LB/A, K: 496 LB/A				

APPLICATION DESCRIPTION

	A	B	C	D
Application Date:	3-27-01	4-12-01	4-26-01	5-9-01
Time of Day:	10:00	9:00	10:00	10:00
Application Method:	SPRAY	SPRAY	SPRAY	SPRAY
Application Timing:	45EPP	30EPP	15EPP	1DBP
Applic. Placement:	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	40 F	52 F	63 F	69 F
% Relative Humidity:	80	56	54	52
Wind Velocity, Unit:	3 MPH	3 MPH	5 MPH	3 MPH
Soil Moisture:	NORMAL	ABONOR	NORMAL	BELNOR

CROP STAGE AT EACH APPLICATION

	A	B	C	D
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA
Height, Unit:	NA NA	NA NA	NA NA	NA NA

WEED STAGE AT EACH APPLICATION

	A	B	C	D
Weed 1 Code:	ALLVI	ALLVI	ALLVI	
Stage(leaves):	3-4	3-4	3-4	
Height(inches):	6-16	10-24	12-30	
Density:	High	High	High	
Weed 3 Code:			SETFA	SETFA
Stage(leaves):			3-4	3-5
Height(inches):			3-4	3-6
Density:			Low	Medium
Weed 4 Code:			AMATA	AMATA
Stage(leaves):			3-4	4-8
Height(inches):			0-2	3-4
Density:			Low	Medium

Weed 5 Code:	CHEAL	CHEAL
Stage(leaves):	10+	10+
Height(inches):	3-6	3-8
Density:	Low	Medium

APPLICATION EQUIPMENT

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

NOTES: weed 2, ERICA, not present at application. HARVESTED 10-10-01, 2 ROWS X 27 FT.

Evaluation of PCC 1164 Applied Preplant in No-Till Corn.

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	ZEAMX		ZEAMX		ALLVI		SETFA		ERICA		ERICA		AMATA					
						Yield	Injury	Injury	Injury	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control	Control		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	10-10-01	5-24-01	6-7-01	6-21-01	5-24-01	6-7-01	6-21-01	5-24-01	6-7-01	6-21-01				
1	NONTREATED									32	0	0	0	0	0	0	0	0	0	0			
2	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	45EPP	A	72	0	0	0	25	25	7	90	90	96	70	62	13	
2	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	45EPP	A														
2	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	45EPP	A														
3	AATREX	90	WG	1.6	LB A/A	28	OZ/A	45EPP	A	83	0	0	0	8	65	43	0	99	99	99	82	58	43
3	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	45EPP	A														
3	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	45EPP	A														
4	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	30EPP	B	140	0	0	0	3	96	95	63	87	89	83	96	92	62
4	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B														
4	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B														
5	AATREX	90	WG	1.6	LB A/A	28	OZ/A	30EPP	B	117	0	0	0	0	95	92	83	99	99	99	96	82	42
5	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B														
5	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B														
6	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	30EPP	B	171	0	0	0	0	97	97	89	99	99	99	97	92	45
6	AATREX	90	WG	0.75	LB A/A	13	OZ/A	30EPP	B														
6	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B														
6	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B														
7	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	30EPP	B	139	0	0	0	10	97	95	79	99	99	99	98	92	42
7	AATREX	90	WG	1.2	LB A/A	21	OZ/A	30EPP	B														
7	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B														
7	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B														
8	PCC 1164	70	WG	0.35	LB A/A	8	OZ/A	15EPP	C	143	0	0	0	7	90	89	53	93	92	93	97	95	75
8	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C														
8	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C														
9	AATREX	90	WG	1.2	LB A/A	21	OZ/A	15EPP	C	147	0	0	0	0	91	93	89	98	99	99	99	94	30
9	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C														
9	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C														
10	BICEP II MAGNUM	5.5	L	2.89	LB A/A	4.2	PT/A	15EPP	C	130	0	0	0	0	96	95	89	99	99	99	96	87	23
10	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C														
11	BALANCE PRO	4	SC	0.094	LB A/A	3	OZ/A	15EPP	C	112	0	0	0	38	98	96	90	99	99	99	98	90	23
11	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C														
11	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C														
12	HORNET	68.5	WG	0.2675	LB A/A	6.25	OZ/A	15EPP	C	105	0	0	0	25	79	72	73	99	99	99	97	84	13
12	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C														
12	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C														
13	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	71	0	0	0	90	13	10	0	99	99	99	99	99	99
13	PCC 1164	70	WG	0.35	LB A/A	8	OZ/A	1DBP	D														
13	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D														

Weed Code										ALLVI	SETFA	SETFA	SETFA	ERICA	ERICA	ERICA	AMATA	AMATA	AMATA
Crop Code										ZEAMX	ZEAMX	ZEAMX	ZEAMX						
Rating Data Type										Yield	Injury	Injury	Injury	Control	Control	Control	Control	Control	Control
Rating Unit										bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Date										10-10-01	5-24-01	6-7-01	6-21-01	5-24-01	5-24-01	6-7-01	6-21-01	5-24-01	6-7-01
Trt-Eval Interval										14 DAP	28 DAP	42 DAP	14 DAP	14 DAP	28 DAP	42 DAP	14 DAP	28 DAP	42 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code														
14	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	90	0	0	0	84	33	30	27	99	99	99	98	83	
14	AATREX	90	WG	1.2	LB A/A	21	OZ/A	1DBP	D														
14	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D														
15	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	122	0	0	0	85	58	52	18	99	99	99	98	99	
15	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	1DBP	D														
15	AATREX	90	WG	1.2	LB A/A	21	OZ/A	1DBP	D														
15	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D														
16	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	185	0	0	0	78	88	87	83	99	99	99	95	92	
16	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	1DBP	D														
16	BALANCE PRO	4	SC	0.094	LB A/A	3	OZ/A	1DBP	D														
16	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D														
LSD (P=.05)										60.5	0.0	0.0	0.0	12.8	32.0	36.5	31.3	6.4	5.9	7.9	16.4	21.8	36.1
Replicate F										0.561	0.000	0.000	0.000	0.835	1.896	2.141	0.182	0.230	0.169	1.136	1.720	1.304	2.074
Replicate Prob(F)										0.5763	1.0000	1.0000	1.0000	0.4436	0.1677	0.1352	0.8342	0.7958	0.8456	0.3346	0.1962	0.2863	0.1434
Treatment F										3.598	0.000	0.000	0.000	65.163	9.304	7.525	11.809	122.667	142.269	80.959	19.359	10.909	6.655
Treatment Prob(F)										0.0014	1.0000	1.0000	1.0000	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	CHEAL	CHEAL	CHEAL
Rating Data Type	Control	Control	Control
Rating Unit	Percent	Percent	Percent
Rating Date	5-24-01	6-7-01	6-21-01
Trt-Eval Interval	14 DAP	28 DAP	42 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CHEAL Control Percent	CHEAL Control Percent	CHEAL Control Percent
1	NONTREATED									0	0	0
2	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	45EPP	A	99	99	99
2	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	45EPP	A			
2	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	45EPP	A			
3	AATREX	90	WG	1.6	LB A/A	28	OZ/A	45EPP	A	99	99	99
3	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	45EPP	A			
3	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	45EPP	A			
4	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	30EPP	B	99	99	99
4	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B			
4	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B			
5	AATREX	90	WG	1.6	LB A/A	28	OZ/A	30EPP	B	99	97	99
5	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B			
5	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B			
6	PCC 1164	70	WG	0.45	LB A/A	10	OZ/A	30EPP	B	99	99	99
6	AATREX	90	WG	0.75	LB A/A	13	OZ/A	30EPP	B			
6	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B			
6	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B			
7	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	30EPP	B	99	99	99
7	AATREX	90	WG	1.2	LB A/A	21	OZ/A	30EPP	B			
7	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	30EPP	B			
7	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	30EPP	B			
8	PCC 1164	70	WG	0.35	LB A/A	8	OZ/A	15EPP	C	99	99	99
8	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C			
8	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C			
9	AATREX	90	WG	1.2	LB A/A	21	OZ/A	15EPP	C	99	99	99
9	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C			
9	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C			
10	BICEP II MAGNUM	5.5	L	2.89	LB A/A	4.2	PT/A	15EPP	C	99	99	99
10	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C			
11	BALANCE PRO	4	SC	0.094	LB A/A	3	OZ/A	15EPP	C	99	99	99
11	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C			
11	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C			
12	HORNET	68.5	WG	0.2675	LB A/A	6.25	OZ/A	15EPP	C	99	98	99
12	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	15EPP	C			
12	HERBIMAX	100	LIQ	1.0	% V/V	1	%V/V	15EPP	C			
13	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	99	99	99
13	PCC 1164	70	WG	0.35	LB A/A	8	OZ/A	1DBP	D			
13	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D			
14	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	99	99	99
14	AATREX	90	WG	1.2	LB A/A	21	OZ/A	1DBP	D			
14	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D			

Weed Code	CHEAL	CHEAL	CHEAL
Rating Data Type	Control	Control	Control
Rating Unit	Percent	Percent	Percent
Rating Date	5-24-01	6-7-01	6-21-01
Trt-Eval Interval	14 DAP	28 DAP	42 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code			
15	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	99	99	99
15	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	1DBP	D			
15	AATREX	90	WG	1.2	LB A/A	21	OZ/A	1DBP	D			
15	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D			
16	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	1.6	PT/A	45EPP	A	99	99	99
16	PCC 1164	70	WG	0.25	LB A/A	5.7	OZ/A	1DBP	D			
16	BALANCE PRO	4	SC	0.094	LB A/A	3	OZ/A	1DBP	D			
16	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	1DBP	D			
LSD (P=.05)										0.0	1.9	0.0
Replicate F										0.000	1.975	0.000
Replicate Prob(F)										1.0000	0.1564	1.0000
Treatment F										0.000	1433.645	0.000
Treatment Prob(F)										1.0000	0.0001	1.0000

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Trial Comments

- 1. Protocol: UAP.
- 2. DAP = days after planting.