

Liberty and Liberty ATZ Adjuvant Study.

00-50W-S190

OBJECTIVE: Evaluate various adjuvants for use in Liberty and Liberty ATZ weed management programs.

SUMMARY: No corn injury was observed for any treatment. The addition of 1.0 lb/A of AMS to Liberty improved control of giant foxtail and fall panicum. Control of common waterhemp with Liberty tended to be less when applied with Adjuvant Solid 4, Adjuvant Liquid 6, and Adjuvant Liquid 8. Control of common waterhemp with Liberty ATZ tended to be less when applied with the adjuvants Adjuvant Liquid 6, Adjuvant Liquid 7, and Adjuvant Liquid 8. Control of giant foxtail with Liberty ATZ tended to be less when applied with the adjuvants Adjuvant Liquid 6 and Adjuvant Liquid 8. Morningglory control was not greatly influenced by the adjuvants tested.

Corn yield ranged from 119 bu/A in nontreated plots to 181 bu/A. Corn yield was lowest in plots that were treated with Liberty alone (no adjuvant). Similar corn yield was observed in plots treated with Liberty plus an adjuvant.

HERBICIDES/ADJUVANTS

LIBERTY 1.67 EC
 LIBERTY ATZ 4.32 EC
 ADJUVANT LIQUID 1 100 LIQ
 ADJUVANT LIQUID 11 100 LIQ
 ADJUVANT LIQUID 12 100 LIQ
 ADJUVANT LIQUID 2 100 LIQ
 ADJUVANT LIQUID 3 100 LIQ
 ADJUVANT LIQUID 6 100 LIQ
 ADJUVANT LIQUID 7 100 LIQ
 ADJUVANT LIQUID 8 100 LIQ
 ADJUVANT LIQUID 9 100 LIQ
 ADJUVANT SOLID 10 100 DRY
 ADJUVANT SOLID 4 100 DRY
 ADJUVANT SOLID 5 100 DRY
 AMS - LIQUID 100 LIQ
 AMS 100 DRY

WEEDS

FOXTAIL, GIANT
 MORNINGGLORY, IVYLEAF
 NUTSEDGE, YELLOW
 PANICUM, FALL
 WATERHEMP, COMMON

CROP

CORN, FIELD

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Liberty and Liberty ATZ Adjuvant Study.

Project Code: 00-50W-S190 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

Weed Code	Common Name	Scientific Name
1. SETFA	FOXTAIL, GIANT	SETARIA FABERI HERRM.
2. CYPES	NUTSEDGE, YELLOW	CYPERUS ESCULENTUS L.
3. AMATA	WATERHEMP, COMMON	AMARANTHUS RUDIS SAUER
4. IPOHE	MORNINGGLORY, IVYLEAF	IPOMOEA HEDERACEA (L.) JACQ.
5. PANDI	PANICUM, FALL	PANICUM DICHOTOMIFLORUM MICHX.

Crop 1:	ZEAMX CORN, FIELD	Variety:	P33G28 LL
Planting Method:	SEEDED	Planting Date:	May-16-00
Rate:	28000 S/A	Depth:	1.5 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	27 FT	Reps:	3
Tillage Type:	REDUCED-TILL	Study Design:	RCB		
Previous Crop, Year:	GLXMA, 1999	Fertilizer applied:	N 0 LB/A,	P ₂ O ₅ 0 LB/A,	K ₂ O 0 LB/A

Soil Name:	WEIR	% OM:	2.6	pH:	6.6	CEC:	12
Texture:	SILT LOAM	P ₁ :	87 LB/A,	K:	439 LB/A		

APPLICATION DESCRIPTION

A
 Application Date: Jun-14-00
 Time of Day: 7:00
 Application Method: SPRAY
 Application Timing: 4-5"W
 Applic. Placement: BROFOL
 Air Temp., Unit: 84 F
 % Relative Humidity: 86
 Wind Velocity, Unit: 2-4 MPH
 Soil Moisture: NORMAL

CROP STAGE AT EACH APPLICATION

A
 Crop 1 Code, Stage: ZEAMX V5-V6
 Height, Unit: 16-18 IN

WEED STAGE AT EACH APPLICATION

A
 Weed 1 Code: SETFA
 Stage(leaves): 4-6
 Height(inches): 3-8
 Density: HIGH

Weed 2 Code: CYPES
 Stage(leaves): 4-6
 Height(inches): 4-8
 Density: LOW

Weed 3 Code: AMATA
 Stage(leaves): 4-10
 Height(inches): 4-13
 Density: HIGH

Weed 4 Code: IPOHE
 Stage(leaves): 3-5
 Height(inches): 4-6
 Density: MEDIUM

APPLICATION EQUIPMENT

A
 Appl. Equipment: CO, SPRAY
 Operating Pressure: 40 PSI
 Nozzle Type: FLAT FAN
 Nozzle Size: 8002
 Boom Length, Unit: 7.33 FT
 Spray Volume, Unit: 15 GPA

NOTES:

Harvested Oct-07-00, (2) 30 inch rows by 24 ft.

TABLE. LIBERTY AND LIBERTY ATZ ADJUVANT STUDY. PROJECT CODE:00-50W-S190

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	ZEAMX				CONTROL, DAYS AFTER 4-5"W												
								INJURY, DAT				SETFA			PANDI			CYPES	AMATA			IPOHE		
								7	14	28	56	14	28	56	14	28	56	14	14	28	56	14	28	56
1 NONTREATED							BU/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
2 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	147	119	0	0	0	0	70	65	63	48	65	63	10	70	60	53	88	86	77
3 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	166	119	0	0	0	0	88	80	78	77	78	77	25	83	70	67	88	93	93
3 AMS	100 DRY	1.0 LB/A	1.0 LB/A	4-5"W	A																			
4 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	162	119	0	0	0	0	83	87	85	68	75	73	30	73	58	53	80	93	87
4 AMS	100 DRY	3.0 LB/A	3.0 LB/A	4-5"W	A																			
5 LIBERTY	1.67 EC	0.364 LB/A/A	28.0 OZ/A	4-5"W	A	160	119	0	0	0	0	87	87	83	83	78	73	60	82	72	68	93	96	93
5 AMS	100 DRY	3.0 LB/A	3.0 LB/A	4-5"W	A																			
6 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	174	119	0	0	0	0	88	92	90	88	90	88	75	96	95	98	99	99	99
6 AMS	100 DRY	3.0 LB/A	3.0 LB/A	4-5"W	A																			
7 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	169	119	0	0	0	0	77	85	85	70	80	77	60	77	65	63	82	83	88
7 AMS - LIQUID	100 LIQ	0.3 GAL/A	0.3 GAL/A	4-5"W	A																			
8 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	157	119	0	0	0	0	83	82	82	82	80	80	45	72	60	58	93	90	90
8 AMS - LIQUID	100 LIQ	0.9 GAL/A	0.9 GAL/A	4-5"W	A																			
9 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	166	119	0	0	0	0	90	88	88	87	88	87	80	94	92	96	99	98	99
9 AMS - LIQUID	100 LIQ	0.9 GAL/A	0.9 GAL/A	4-5"W	A																			
10 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	166	119	0	0	0	0	83	77	73	67	82	80	30	80	70	75	96	93	96
10 ADJUVANT LIQUID 1	100 LIQ	1.0 % V/V	1.0 %V/V	4-5"W	A																			
11 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	176	119	0	0	0	0	83	83	80	75	80	77	30	82	82	83	99	96	99
11 ADJUVANT LIQUID 1	100 LIQ	1.0 % V/V	1.0 %V/V	4-5"W	A																			
12 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	161	119	0	0	0	0	85	85	85	77	78	78	30	80	68	67	91	90	96
12 ADJUVANT LIQUID 2	100 LIQ	2.5 % V/V	2.5 %V/V	4-5"W	A																			
13 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	174	119	0	0	0	0	87	87	85	87	88	87	60	94	95	96	99	99	98
13 ADJUVANT LIQUID 2	100 LIQ	2.5 % V/V	2.5 %V/V	4-5"W	A																			
14 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	168	119	0	0	0	0	85	78	77	72	78	75	25	77	67	63	93	96	91
14 ADJUVANT LIQUID 3	100 LIQ	2.5 % V/V	2.5 %V/V	4-5"W	A																			
15 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	179	119	0	0	0	0	88	85	83	82	80	80	70	90	89	87	98	99	99
15 ADJUVANT LIQUID 3	100 LIQ	2.5 % V/V	2.5 %V/V	4-5"W	A																			
16 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	160	119	0	0	0	0	70	78	80	67	80	80	35	60	53	47	83	86	88
16 ADJUVANT SOLID 4	100 DRY	1.08 % W/W	1.08 %W/W	4-5"W	A																			
17 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	173	119	0	0	0	0	80	82	80	77	77	75	70	90	83	79	91	99	99
17 ADJUVANT SOLID 4	100 DRY	1.08 % W/W	1.08 %W/W	4-5"W	A																			
18 LIBERTY	1.67 EC	0.261 LB/A/A	20.0 OZ/A	4-5"W	A	167	119	0	0	0	0	88	85	82	82	78	72	50	77	68	65	94	99	96
18 ADJUVANT SOLID 4	100 DRY	1.08 % W/W	1.08 %W/W	4-5"W	A																			
18 AMS	100 DRY	1.5 LB/A	1.5 LB/A	4-5"W	A																			
19 LIBERTY ATZ	4.32 EC	1.355 LB/A/A	40.0 OZ/A	4-5"W	A	176	119	0	0	0	0	88	80	78	82	83	82	45	91	82	84	96	98	98
19 ADJUVANT SOLID 4	100 DRY	1.08 % W/W	1.08 %W/W	4-5"W	A																			
19 AMS	100 DRY	1.5 LB/A	1.5 LB/A	4-5"W	A																			

(CONTINUED)

TABLE. LIBERTY AND LIBERTY ATZ ADJUVANT STUDY. PROJECT CODE:00-50W-S190 (CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	ZEAMX				CONTROL, DAYS AFTER 4-5"W													
								INJURY, DAT				SETFA			PANDI			CYPES	AMATA			IPOHE			
								7	14	28	56	14	28	56	14	28	56	14	14	28	56	14	28	56	
20 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	167	0	0	0	0	82	77	75	70	78	77	50	75	65	72	90	88	87
20 ADJUVANT SOLID 5	100 DRY	2.0	LB/A	2.0	LB/A	4-5"W	A																		
21 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	169	0	0	0	0	83	78	78	87	82	80	50	92	89	95	99	98	99
21 ADJUVANT SOLID 5	100 DRY	2.0	LB/A	2.0	LB/A	4-5"W	A																		
22 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	163	0	0	0	0	80	72	72	72	80	78	30	63	48	65	85	83	86
22 ADJUVANT LIQUID 6	100 LIQ	0.75	% V/V	0.75	%V/V	4-5"W	A																		
23 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	169	0	0	0	0	73	78	78	77	82	83	50	82	75	84	99	96	98
23 ADJUVANT LIQUID 6	100 LIQ	0.75	% V/V	0.75	%V/V	4-5"W	A																		
24 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	167	0	0	0	0	88	88	88	77	83	83	50	67	62	60	93	93	86
24 ADJUVANT LIQUID 7	100 LIQ	2.5	% V/V	2.5	%V/V	4-5"W	A																		
25 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	170	0	0	0	0	88	90	90	77	80	80	47	83	73	74	95	98	99
25 ADJUVANT LIQUID 7	100 LIQ	2.5	% V/V	2.5	%V/V	4-5"W	A																		
26 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	169	0	0	0	0	85	82	82	75	83	83	20	77	65	80	95	88	94
26 ADJUVANT LIQUID 8	100 LIQ	0.5	% V/V	0.5	%V/V	4-5"W	A																		
27 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	176	0	0	0	0	75	68	68	73	87	87	60	81	73	81	99	99	99
27 ADJUVANT LIQUID 8	100 LIQ	0.5	% V/V	0.5	%V/V	4-5"W	A																		
28 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	163	0	0	0	0	88	83	83	77	77	77	80	72	58	65	98	99	99
28 ADJUVANT LIQUID 9	100 LIQ	0.75	% V/V	0.75	%V/V	4-5"W	A																		
29 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	172	0	0	0	0	87	88	88	87	85	85	70	88	85	91	99	99	99
29 ADJUVANT LIQUID 9	100 LIQ	0.75	% V/V	0.75	%V/V	4-5"W	A																		
30 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	181	0	0	0	0	88	78	78	77	80	78	35	78	67	72	96	96	99
30 ADJUVANT SOLID 10	100 DRY	1.08	% W/W	1.08	%W/W	4-5"W	A																		
31 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	175	0	0	0	0	88	90	90	85	90	90	70	90	89	90	99	99	99
31 ADJUVANT SOLID 10	100 DRY	1.08	% W/W	1.08	%W/W	4-5"W	A																		
32 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	176	0	0	0	0	87	87	87	77	78	77	45	88	72	77	86	90	90
32 ADJUVANT LIQUID 11	100 LIQ	1.0	% V/V	1.0	%V/V	4-5"W	A																		
33 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	179	0	0	0	0	87	85	85	80	82	82	60	90	87	96	99	96	99
33 ADJUVANT LIQUID 11	100 LIQ	1.0	% V/V	1.0	%V/V	4-5"W	A																		
34 LIBERTY	1.67 EC	0.261	LB A/A	20.0	OZ/A	4-5"W	A	175	0	0	0	0	80	78	80	75	77	77	30	77	72	72	93	85	96
34 ADJUVANT LIQUID 12	100 LIQ	1.0	% V/V	1.0	%V/V	4-5"W	A																		
35 LIBERTY ATZ	4.32 EC	1.355	LB A/A	40.0	OZ/A	4-5"W	A	174	0	0	0	0	87	83	83	85	82	82	50	93	91	94	99	99	99
35 ADJUVANT LIQUID 12	100 LIQ	1.0	% V/V	1.0	%V/V	4-5"W	A																		
LSD								24	0	0	0	0	13	14	14	16	12	12	33	12	16	18	11	12	11
P								0.03	1.0	1.0	1.0	1.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

1. PROTOCOL: AVENTIS.

2. RATING DATES:

7 DAYS AFTER 4-5"W, 14 DAYS AFTER 4-5"W, 28 DAYS AFTER 4-5"W, AND 56 DAYS AFTER 4-5"W ON JUN-21-00, JUN-28-00, JUL-12-00, AND AUG-9-00, RESPECTIVELY.