

# University of Tennessee

## Enlist Duo Systems Approach for Weed Management in Cotton utilizing PRE followed by POST Sequential Programs

Trial ID: NA17K1A001      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: NA17K1A001      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
                                  Sponsor Contact: HAYGOOD

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	UNTREATED							101	208	305	404	
2	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	102	203	301	405	
3	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	103	207	306	407	
	ROUNDUP WEATHERMAX	4.5 LBAE/GAL	SL		28.4 oz/a	2-4"	B					
	ROUNDUP WEATHERMAX	4.5 LBAE/GAL	SL		28.4 oz/a	14-21	DAB C					
4	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	104	205	303	408	
	ENLIST DUO	3.33333325	LBAE/GAL	SL	75 oz/a	2-4"	B					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	14-21	DAB C					
	2,4-D CHOLINE SALT	3.8 LBAE/GAL	SL		32 oz/a	14-21	DAB C					
	DUAL MAGNUM	7.61666679	LBA/GAL	EC	16 oz/a	14-21	DAB C					
5	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	105	204	307	401	
	2,4-D CHOLINE SALT	3.8 LBAE/GAL	SL		32 oz/a	2-4"	B					
	DUAL MAGNUM	7.61666679	LBA/GAL	EC	16 oz/a	2-4"	B					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	2-4"	B					
	ENLIST DUO	3.33333325	LBAE/GAL	SL	75 oz/a	14-21	DAB C					
6	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	106	201	308	406	
	DUAL MAGNUM	7.61666679	LBA/GAL	EC	16 oz/a	2-4"	B					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	2-4"	B					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	14-21	DAB C					
	ROUNDUP WEATHERMAX	4.5 LBAE/GAL	SL		28.4 oz/a	14-21	DAB C					
7	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	107	206	302	403	
	ENLIST DUO	3.33333325	LBAE/GAL	SL	75 oz/a	2-4"	B					
	DUAL MAGNUM	7.61666679	LBA/GAL	EC	16 oz/a	14-21	DAB C					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	14-21	DAB C					
8	COTORAN 4L		4 LBA/GAL	SC	32 oz/a	PRE	A	108	202	304	402	
	DUAL MAGNUM	7.61666679	LBA/GAL	EC	16 oz/a	2-4"	B					
	LIBERTY	2.13266659	LBAE/GAL	SL	29 oz/a	2-4"	B					
	ENLIST DUO	3.33333325	LBAE/GAL	SL	75 oz/a	14-21	DAB C					

Sort Order: Replicate 1

General Trial Information	
<b>Study Director:</b> LARRY STECKEL	
<b>Investigator:</b> Dr. Larry Steckel	
<b>Planned Completion Date:</b> Oct-16-2017	
Trial Location	
<b>Country:</b> USA United States	
<b>Conducted Under GLP:</b> No	
<b>Conducted Under GEP:</b> No	

<b>Objectives:</b> What is the relative efficacy of various system approaches for controlling GLY-RES weeds utilizing a residual weed management program followed by Enlist Duo (GF-2726) alone and in tank-mix combinations in Enlist cotton?
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Contacts	
<b>Study Director:</b> LARRY STECKEL	
<b>Investigator:</b> Dr. Larry Steckel	

Crop Description	
<b>Crop 1:</b> GOSHI <i>Gossypium hirsutum</i>	American upland cotton
<b>Variety:</b> PHY490W3FE	<b>BBCH Scale:</b> BCOT
<b>Description:</b> AAD-12/GLU/GLY-TOL	
<b>Planting Rate, Unit:</b> 4 P/FT	<b>Planting Date:</b> May-1-2017
<b>Depth, Unit:</b> 0.5 in	<b>Planting Method:</b> PLANTD planted
<b>Row Spacing, Unit:</b> 38 in	<b>Planting Equipment:</b> PP Plot Planter
	<b>Emergence Date:</b> May-9-2017

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## Enlist Duo Systems Approach for Weed Management in Cotton utilizing PRE followed by POST Sequential Programs

Trial ID: NA17K1A001      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: NA17K1A001      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
                                  Sponsor Contact: HAYGOOD

### Pest Description

**Pest 1 Type:** W    **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth  
**Description:** GLY-RES

**Pest 2 Type:** W    **Code:** ERICA *Conyza canadensis*  
**Common Name:** Horseweed  
**Description:** GLY-RES

**Pest 3 Type:** W    **Code:** IPOSS *Ipomoea* sp.  
**Common Name:** Morning glory

**Pest 4 Type:** W    **Code:** ANNGR Annual Grasses

### Site and Design

**Treated Plot Width:** 9.5 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 285 FT<sup>2</sup>    **Treatments:** 8    **Tillage Type:** NOTILL no-till  
**Replications:** 4                    **Study Design:** RACOB L Randomized Complete Block (RCB)  
**Untreated Arrangement:** INCLUDED single control randomized in each block

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup weathermax + 8 oz/a clarity

planted 5/1

5/2 Cotoran 32 oz/a + 48 oz/a gramoxone

5/22 0.25 lb/a orthene

5/31 0.25 lb/a orthene

### Application Description

	A	B	C
<b>Application Date:</b>	May-2-2017	May-30-2017	
<b>Appl. Start Time:</b>		11:20 AM	
<b>Appl. Stop Time:</b>		11:28 AM	
<b>Application Method:</b>	SPRAY	SPRAY	
<b>Application Timing:</b>	PRE	POST	
<b>Application Placement:</b>	BROSOL	BROSOL	
<b>Applied By:</b>	LS	DC	
<b>Air Temperature, Unit:</b>	53 f	87 f	
<b>% Relative Humidity:</b>	71	49	
<b>Wind Velocity, Unit:</b>	4 MPH	2 mph	
<b>Wind Direction:</b>	SW	n	
<b>Dew Presence (Y/N):</b>	N no	N no	
<b>Soil Temperature, Unit:</b>	62 F	82 f	
<b>% Cloud Cover:</b>	10	10	

### Crop Stage At Each Application

	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	PRE	POST	
<b>Stage Majority, Percent:</b>		3 LF	

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 Project ID:      Study Director: LARRY STECKEL  
    Sponsor Contact: HAYGOOD

Pest Stage At Each Application			
	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W	AMAPA W
<b>Height, Unit:</b>		2.5 IN	
<b>Height Minimum, Maximum:</b>		2 3	
<b>Pest 2 Code, Type, Scale:</b>	ERICA W	ERICA W	ERICA W
<b>Pest 3 Code, Type, Scale:</b>	IPOSS W	IPOSS W	IPOSS W
<b>Height, Unit:</b>		2.5 IN	
<b>Height Minimum, Maximum:</b>		2 3	
<b>Pest 4 Code, Type, Scale:</b>	ANNGR W	ANNGR W	ANNGR W
<b>Height, Unit:</b>		3 IN	
<b>Height Minimum, Maximum:</b>		2 4	

Application Equipment			
	A	B	C
<b>Appl. Equipment:</b>	JD 5300	BACKPACK	
<b>Equipment Type:</b>	TRACTO	BACCAI	
<b>Operation Pressure, Unit:</b>		33 PSI	
<b>Nozzle Type:</b>	AIXR	AIXR	
<b>Nozzle Size:</b>	015	025	
<b>Nozzle Spacing, Unit:</b>	19 IN	19 IN	
<b>Nozzles/Row:</b>	2	2	
<b>Boom Length, Unit:</b>	12.6 FT	6.33 FT	
<b>Boom Height, Unit:</b>	18 IN	18 IN	
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH	
<b>Carrier:</b>	WATER	WATER	
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC	
<b>Mix Size, Unit:</b>		0.528 gallons	
<b>Propellant:</b>		CO2	
<b>Tank Mix (Y/N):</b>	N no	Y yes	

# University of Tennessee

## COTORAN CROP SAFETY IN COTTON

Trial ID: 212524 Cotoran Safety  
 Protocol ID: 212524 Cotoran Safety  
 Project ID: 212524

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact: A. KENDIG

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK	UNTREATED							101	202	309	405	
2	HERB	COTORAN	4	LB/GAL	L	16 oz/a	PRE	A	102	206	310	406	
3	HERB	COTORAN	4	LB/GAL	L	24 oz/a	PRE	A	103	204	308	411	
4	HERB	COTORAN	4	LB/GAL	L	32 oz/a	PRE	A	104	205	306	408	
5	HERB	BRAKE FX	3.6	LB/GAL	L	32 oz/a	PRE	A	105	203	307	409	
6	HERB	BRAKE FX	3.6	LB/GAL	L	42 oz/a	PRE	A	106	201	303	401	
7	HERB	DIREX	4	LB/GAL	L	32 oz/a	PRE	A	107	211	301	402	
8	HERB	CAPAROL	4	LB/GAL	L	48 oz/a	PRE	A	108	207	311	407	
9	HERB	WARRANT	3	LB/GAL	L	48 oz/a	PRE	A	109	210	304	410	
10	HERB	REFLEX	2	LB/GAL	L	16 oz/a	PRE	A	110	208	302	403	
11	HERB	COTORAN	4	LB/GAL	L	16 oz/a	COTYL	B	111	209	305	404	

Sort Order: Replicate 1

General Trial Information	
<b>Study Director:</b> LARRY STECKEL	
<b>Investigator:</b> Dr. Larry Steckel	
Trial Location	
<b>Country:</b> USA United States	
<b>Conducted Under GLP:</b> No	
<b>Conducted Under GEP:</b> No	

<b>Objectives:</b> Evaluate the crop safety and weed control of Cotoran at reduced rates and over-the-top versus competitive products- sandy soil emphasis.  This is a standard preemergence herbicide efficacy/crop response trial, However, we would like to pay special attention to crop response.
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Contacts
<b>Study Director:</b> LARRY STECKEL
<b>Investigator:</b> Dr. Larry Steckel

Crop Description
<b>Crop 1:</b> GOSHI Gossypium hirsutum American upland cotton
<b>Variety:</b> DP1518B2XF <b>BBCH Scale:</b> BCOT
<b>Description:</b> XTENDFLEX
<b>Planting Rate, Unit:</b> 4 S/FT <b>Planting Date:</b> May-1-2017
<b>Depth, Unit:</b> 0.5 IN <b>Planting Method:</b> PLANTD planted
<b>Row Spacing, Unit:</b> 38 IN <b>Planting Equipment:</b> PP Plot Planter
<b>Emergence Date:</b> May-9-2017

Site and Design
<b>Treated Plot Width:</b> 6.33 FT <b>Site Type:</b> FIELD field
<b>Treated Plot Length:</b> 30 FT
<b>Treated Plot Area:</b> 189.9 FT2 <b>Treatments:</b> 11 <b>Tillage Type:</b> NOTILL no-till
<b>Replications:</b> 4 <b>Study Design:</b> RACOB� Randomized Complete Block (RCB)

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## COTORAN CROP SAFETY IN COTTON

Trial ID: 212524 Cotoran Safety  
 Protocol ID: 212524 Cotoran Safety  
 Project ID: 212524

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact: A. KENDIG

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup weathermax + 8 oz/a clarity

5/1/17 planted

5/2/17 48 oz/a gramoxone

5/22 0.25 lb/a orthene

5/31 0.25 lb/a orthene

6/7/17 29 OZ/A LIBERTY + 16 OZ/A DUAL

### Application Description

	A	B
<b>Application Date:</b>	May-3-2017	May-11-2017
<b>Appl. Start Time:</b>	6:13 AM	2:08 PM
<b>Appl. Stop Time:</b>	6:25 AM	2:10 PM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	POST
<b>Application Placement:</b>	BROSOI	BROSOI
<b>Applied By:</b>	DC	JR
<b>Air Temperature, Unit:</b>	57.2 F	93 F
<b>% Relative Humidity:</b>	69.8	35
<b>Wind Velocity, Unit:</b>	6 MPH	2 MPH
<b>Wind Direction:</b>	S	W
<b>Dew Presence (Y/N):</b>	Y yes	N no
<b>Soil Temperature, Unit:</b>	58 F	82 F
<b>Soil Moisture:</b>	NORMAL	NORMAL
<b>% Cloud Cover:</b>	20	70

### Crop Stage At Each Application

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	PRE	COTY

### Application Equipment

	A	B
<b>Appl. Equipment:</b>	BACKAPCK	BACKAPCK
<b>Equipment Type:</b>	BACCAI	BACCAI
<b>Operation Pressure, Unit:</b>	33 PSI	33 PSI
<b>Nozzle Type:</b>	AIXR	AIXR
<b>Nozzle Size:</b>	025	025
<b>Nozzle Spacing, Unit:</b>	19 IN	19 IN
<b>Nozzles/Row:</b>	2	2
<b>Boom Length, Unit:</b>	6.33 FT	6.33 FT
<b>Boom Height, Unit:</b>	18 IN	18 IN
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH
<b>Carrier:</b>	WATER	WATER
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC
<b>Mix Size, Unit:</b>	0.528 gallons	0.528 gallons
<b>Propellant:</b>	COMCO2	COMCO2
<b>Tank Mix (Y/N):</b>	N no	N no

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## COTORAN CROP SAFETY IN COTTON

Trial ID: 212524 Cotoran Safety  
Protocol ID: 212524 Cotoran Safety  
Project ID: 212524

Location: JACKSON TN Trial Year: 2017  
Investigator: Dr. Larry Steckel  
Study Director: LARRY STECKEL  
Sponsor Contact: A. KENDIG

# University of Tennessee

## XtendFlex Evaluations for Midsouth

Trial ID: B6-07      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: B6-07      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: John T Fowler  
 Sponsor Contact: B. MONTGOMERY

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check								101	209	313	405	
2	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	102	215	308	401	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
3	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	103	207	305	415	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C					
4	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	104	214	306	404	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
5	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	105	202	303	410	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C					
6	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	106	203	314	406	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	21.7	oz/a	LAYBY	D					
	HERB DIREX 4L	4	LB/GAL	SC	24	oz/a	LAYBY	D					
7	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	107	213	309	407	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	LAYBY	D					
	HERB DIREX 4L	4	LB/GAL	SC	24	oz/a	LAYBY	D					
8	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	108	211	304	409	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	LAYBY	D					
	HERB DIREX 4L	4	LB/GAL	SC	24	oz/a	LAYBY	D					
9	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	109	204	312	402	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	LAYBY	D					
	HERB DIREX 4L	4	LB/GAL	SC	24	oz/a	LAYBY	D					

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 Project ID:      Study Director: John T Fowler  
 Sponsor Contact: B. MONTGOMERY

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
10	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	110	206	307	411	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
11	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	111	210	311	403	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C					
12	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	112	205	301	408	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A					
HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B						
HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B						
HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B						
ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B						
HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C						
HERB LIBERTY 280 SL	2.34	LB/GAL	SL	43	oz/a	18	DAB C						
14	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	114	212	315	413	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	29	oz/a	14	DAP B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB DUAL MAGNUM	7.62	LB/GAL	EC	16	oz/a	18	DAB C					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C					
15	HERB COTORAN 4	4	LB/GAL	SC	32	oz/a	PRE	A	115	201	310	412	
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	14	DAP B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	14	DAP B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	14	DAP B					
	ADJ INTACT	43.18	%	EF	0.5	% v/v	14	DAP B					
	HERB XTENDIMAX	2.9	LBAE/GAL	SL	22	oz/a	18	DAB C					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32	oz/a	18	DAB C					
	HERB DUAL MAGNUM	7.62	LB/GAL	EC	16	oz/a	18	DAB C					
ADJ INTACT	43.18	%	EF	0.5	% v/v	18	DAB C						

Sort Order: Replicate 1

General Trial Information	
<b>Study Director:</b> John T Fowler <b>Investigator:</b> Dr. Larry Steckel	
Trial Location	
<b>Country:</b> USA United States	
<b>Conducted Under GLP:</b> No	
<b>Conducted Under GEP:</b> No	

<b>Objectives:</b> To determine the best order of application of glufosinate and dicamba in combination with glyphosate in a weed management system for XtendFlex cotton. Also, to evaluate the value of a layby program if no residual herbicides are used in a POST over-the-top system. Treatments will also determine the benefit of a POST 1 residual in systems without a layby program and the potential for using two POST over-the-top residual applications instead of layby.
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Contacts
<b>Study Director:</b> John T Fowler



# University of Tennessee

## XtendFlex Evaluations for Midsouth

Trial ID: B6-07      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: B6-07      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: John T Fowler  
 Sponsor Contact: B. MONTGOMERY

**Investigator:** Dr. Larry Steckel

<b>Crop Description</b>	
<b>Crop 1:</b> GOSHI <i>Gossypium hirsutum</i> American upland cotton	
<b>Variety:</b> DP1518B2XF <b>BBCH Scale:</b> BCOT	
<b>Description:</b> XTENDFLEX	
<b>Planting Rate, Unit:</b> 4      S/FT	<b>Planting Date:</b> May-1-2017
<b>Depth, Unit:</b> 0.5 IN	<b>Planting Method:</b> PLANTD planted
<b>Row Spacing, Unit:</b> 38 IN	<b>Planting Equipment:</b> PP      Plot Planter
	<b>Emergence Date:</b> May-9-2017

<b>Pest Description</b>	
<b>Pest 1 Type:</b> W <b>Code:</b> AMAPA <i>Amaranthus palmeri</i>	
<b>Common Name:</b> Palmer amaranth	
<b>Pest 2 Type:</b> W <b>Code:</b> IPOLA <i>Ipomoea lacunosa</i>	
<b>Common Name:</b> Pitted morningglory	
<b>Pest 3 Type:</b> W <b>Code:</b> SIDSP <i>Sida spinosa</i>	
<b>Common Name:</b> Teaweed	
<b>Pest 4 Type:</b> W <b>Code:</b> CYPES <i>Cyperus esculentus</i>	
<b>Common Name:</b> Yellow nutsedge	

<b>Site and Design</b>	
<b>Treated Plot Width:</b> 9.5 FT	<b>Site Type:</b> FIELD      field
<b>Treated Plot Length:</b> 30 FT	
<b>Treated Plot Area:</b> 285 FT <sup>2</sup> <b>Treatments:</b> 15	<b>Tillage Type:</b> NOTILL      no-till
<b>Replications:</b> 4	<b>Study Design:</b> RACOBL Randomized Complete Block (RCB)
3 DAT	

**Field Prep./Maintenance:**  
 3/20/17 32 oz/a roundup weathermx + 8 oz/a clarity

5/1 PLANTED  
 5/2 GRAMOXONE 48 OZ/A

5/9 johnsongrass select max 16 oz/a + coc 1%

GPS(NW) N 35.63255 W -088.85767, (NE) N 35.63232 W -088.85725,(SW) N 35.63213 W -088.85801, (SE) N 35.63189 W -088.85759

5/22 0.25 lb/a orthene

5/31 0.25 lb/a orthene

# University of Tennessee

## XtendFlex Evaluations for Midsouth

Trial ID: B6-07      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: B6-07      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: John T Fowler  
 Sponsor Contact: B. MONTGOMERY

Application Description				
	A	B	C	D
<b>Application Date:</b>	May-2-2017	May-23-2017	Jun-6-2017	
<b>Appl. Start Time:</b>	9:15	8:44 AM	9:49 AM	
<b>Appl. Stop Time:</b>	9:27 AM	9:06 AM	10:08 AM	
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY	
<b>Application Timing:</b>	PRE	POST	POST	
<b>Application Placement:</b>	BROSOI	BROSOI	BROSOI	
<b>Applied By:</b>	LS	DC	DC	
<b>Air Temperature, Unit:</b>	60 F	76.3 F	79 F	
<b>% Relative Humidity:</b>		60.2	73	
<b>Wind Velocity, Unit:</b>	4 MPH	0 MPH	4 MPH	
<b>Wind Direction:</b>	S		ESE	
<b>Dew Presence (Y/N):</b>		N no	N no	
<b>Soil Temperature, Unit:</b>	62 F	71.2 F	74.5 F	
<b>Soil Moisture:</b>		NORM	NORM	
<b>% Cloud Cover:</b>	10	100	25	

Crop Stage At Each Application				
	A	B	C	D
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	PRE	POST	POST	
<b>Stage Majority, Percent:</b>		2 LF	6 LF	

Pest Stage At Each Application				
	A	B	C	D
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W	AMAPA W	AMAPA W
<b>Stage Majority, Percent:</b>		4 LF		
<b>Stage Minimum, Percent:</b>		2 LF		
<b>Stage Maximum, Percent:</b>		8 LF		
<b>Height, Unit:</b>		1 IN	3 IN	
<b>Pest 2 Code, Type, Scale:</b>	IPOLA W	IPOLA W	IPOLA W	IPOLA W
<b>Stage Majority, Percent:</b>		1 LF		
<b>Stage Minimum, Percent:</b>		1 LF		
<b>Stage Maximum, Percent:</b>		2 LF		
<b>Height, Unit:</b>		1 IN	1 IN	
<b>Pest 3 Code, Type, Scale:</b>	SIDSP W	SIDSP W	SIDSP W	SIDSP W
<b>Stage Majority, Percent:</b>		4+ LF	COTY	
<b>Height, Unit:</b>		5 IN		
<b>Height Minimum, Maximum:</b>		4 6		
<b>Pest 4 Code, Type, Scale:</b>	CYPES W	CYPES W	CYPES W	CYPES W
<b>Stage Majority, Percent:</b>		COTY		

# University of Tennessee

## XtendFlex Evaluations for Midsouth

Trial ID: B6-07      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: B6-07      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: John T Fowler  
 Sponsor Contact: B. MONTGOMERY

Application Equipment				
	A	B	C	D
<b>Appl. Equipment:</b>	JD5300 TRACT	BACKPACK	BACKAPCK	
<b>Equipment Type:</b>	TRMOSP	BACCAI	BACCAI	
<b>Operation Pressure, Unit:</b>		33 PSI	28 PSI	
<b>Nozzle Type:</b>	AIXR	TTI/AIXR	TTI	
<b>Nozzle Size:</b>	015	11003/025	003	
<b>Nozzle Spacing, Unit:</b>		19 IN	19 IN	
<b>Nozzles/Row:</b>		2	2	
<b>Boom Length, Unit:</b>		6.33 FT	6.33 FT	
<b>Boom Height, Unit:</b>		18 IN	18 IN	
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH	4 MPH	
<b>Carrier:</b>	WATER	WATER	WATER	
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC	15 GAL/AC	
<b>Mix Size, Unit:</b>		0.528 gallons	0.528 gallons	
<b>Propellant:</b>		CO2	CO2	
<b>Tank Mix (Y/N):</b>		Y yes	Y yes	

# University of Tennessee

## BRAKE FX ON COTTON

Trial ID: BRAKEFX2017      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID:                      Investigator: Dr. Larry Steckel  
 Project ID:                         Study Director: LARRY STECKEL  
 Sponsor Contact:

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check							101	203	307	411	
2	HERB BRAKE FX -FLURIDONE -FLUOMETURON	3.6 0.6 3	LB/GAL	SL	32 oz/a	PRE	A	102	213	308	410	
3	HERB BRAKE FX -FLURIDONE -FLUOMETURON HERB CLARITY	3.6 0.6 3 4	LB/GAL	SL	16 oz/a	PRE	A	103	206	310	401	
4	HERB WARRANT	3	LB/GAL	SL	48 oz/a	PRE	A	104	201	309	412	
5	HERB WARRANT HERB CLARITY	3 4	LB/GAL	SL	48 oz/a 16 oz/a	PRE	A A	105	208	303	402	
6	HERB CLARITY	4		SL	16 oz/a	PRE	A	106	212	304	407	
7	HERB COTORAN	4		F	32 oz/a	PRE	A	107	205	312	403	
8	HERB CAPAROL	4	LBA/GAL	SC	32 oz/a	PRE	A	108	210	301	404	
9	HERB COTORAN HERB CLARITY	4 4		F SL	32 oz/a 16 oz/a	PRE	A A	109	207	313	409	
10	HERB CAPAROL HERB CLARITY	4 4	LBA/GAL	SC SL	32 oz/a 16 oz/a	PRE	A A	110	211	306	405	
11	HERB COTORAN HERB CAPAROL	4 4		F LBA/GAL	16 oz/a 16 oz/a	PRE	A A	111	204	302	406	
12	HERB WARRANT HERB WARRANT	3 3	LB/GAL	SL	24 oz/a	PRE	A	112	209	305	408	
13	HERB CLARITY HERB WARRANT	4 3	LB/GAL	SL	16 oz/a 48 oz/a	PRE	A 1 LF B	113	202	311	413	

Sort Order: Replicate 1

### General Trial Information

**Study Director:** LARRY STECKEL  
**Investigator:** Dr. Larry Steckel

### Trial Location

**Country:** USA United States

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Contacts

**Study Director:** LARRY STECKEL

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI *Gossypium hirsutum* American upland cotton  
**Variety:** DP1518B2XF      **BBCH Scale:** BCOT  
**Description:** XTENDFELX  
**Planting Rate, Unit:** 4 S/FT      **Planting Date:** May-1-2017  
**Depth, Unit:** 0.5 IN      **Planting Method:** PLANTD planted  
**Row Spacing, Unit:** 38 IN      **Planting Equipment:** PP Plot Planter  
**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W      **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth

**Pest 2 Type:** W      **Code:** ELEIN *Eleusine indica*  
**Common Name:** Goosegrass

**Pest 3 Type:** W      **Code:** ANNGR Annual Grasses

**Pest 4 Type:** W      **Code:** IPOLA *Ipomoea lacunosa*  
**Common Name:** Pitted morningglory

# University of Tennessee

## BRAKE FX ON COTTON

Trial ID: BRAKEFX2017      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID:                      Investigator: Dr. Larry Steckel  
 Project ID:                        Study Director: LARRY STECKEL  
    Sponsor Contact:

### Site and Design

**Treated Plot Width:** 6.33 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 189.9 FT<sup>2</sup>      **Treatments:** 13      **Tillage Type:** NOTILL no-till  
**Replications:** 4                      **Study Design:** RAOBL Randomized Complete Block (RCB)

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup weathermax + 8 oz/a clarity

5/1 PLANTED + 48 OZ/A GRAMOXONE

5/22 0.25 lb/a orthene

5/31 0.25 lb/a orthene

6/7/17 29 OZ/A LIBERTY + 16 OZ/A DUAL

### Application Description

	A	B
<b>Application Date:</b>	May-2-2017	May-23-2017
<b>Appl. Start Time:</b>	1:18 PM	7:56 AM
<b>Appl. Stop Time:</b>	1:36 PM	7:58 AM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	POST
<b>Application Placement:</b>	BROSOI	BROSOI
<b>Applied By:</b>	DC	DC
<b>Air Temperature, Unit:</b>	83 F	69.5 F
<b>% Relative Humidity:</b>	32	71
<b>Wind Velocity, Unit:</b>	7 MPH	2 MOH
<b>Wind Direction:</b>	NW	NW
<b>Dew Presence (Y/N):</b>	N no	Y yes
<b>Soil Temperature, Unit:</b>	70.8 F	68.4 F
<b>% Cloud Cover:</b>	0	95

### Crop Stage At Each Application

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	PRE	1 LEAF

### Pest Stage At Each Application

	A	B
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W
<b>Stage Majority, Percent:</b>		2-6 LF
<b>Height, Unit:</b>		1.5 IN
<b>Height Minimum, Maximum:</b>		1 2
<b>Pest 2 Code, Type, Scale:</b>	ELEIN W	ELEIN W
<b>Pest 3 Code, Type, Scale:</b>	ANNGR W	ANNGR W
<b>Stage Majority, Percent:</b>		1 LF
<b>Height, Unit:</b>		1 IN
<b>Pest 4 Code, Type, Scale:</b>	IPOLA W	IPOLA W
<b>Stage Majority, Percent:</b>		COTY
<b>Height, Unit:</b>		1 IN

# University of Tennessee

## BRAKE FX ON COTTON

Trial ID: BRAKEFX2017      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID:                      Investigator: Dr. Larry Steckel  
 Project ID:                        Study Director: LARRY STECKEL  
 Sponsor Contact:

				Application Equipment	
	A		B		
<b>Appl. Equipment:</b>	BACKPACK		BACKPACK		
<b>Equipment Type:</b>	BACCAI		BACCAI		
<b>Operation Pressure, Unit:</b>	30	PSI	33	PSI	
<b>Nozzle Type:</b>	TTI		AIXR		
<b>Nozzle Size:</b>	003		025		
<b>Nozzle Spacing, Unit:</b>	19 IN		19 IN		
<b>Nozzles/Row:</b>	2		2		
<b>Boom Length, Unit:</b>	6.33 FT		6.33 FT		
<b>Boom Height, Unit:</b>	18 IN		18 IN		
<b>Ground Speed, Unit:</b>	4 MPH		4 MPH		
<b>Carrier:</b>	WATER		WATER		
<b>Spray Volume, Unit:</b>	15	GAL/AC	15	GAL/AC	
<b>Mix Size, Unit:</b>	0.528 gallons		0.528 gallons		
<b>Propellant:</b>	CO2		CO2		
<b>Tank Mix (Y/N):</b>	N no		N no		

# University of Tennessee

## Burndown Plant-Back Timing in Cotton

Trial ID: NA17D2C011      Location: Jackson      Trial Year: 2017  
 Protocol ID: NA17D2C011      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: Larry Steckel  
                                  Sponsor Contact: Drew Ellis

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Growth Unit	Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK UNTREATED							A	101	202	307	402	
2	HERB HALAUXIFEN-METHYL	.570833325	LBAE/GAL	SC	1 oz/a	30	DBP	A	102	206	305	406	
3	HERB HALAUXIFEN-METHYL	.570833325	LBAE/GAL	SC	2 oz/a	30	DBP	A	103	205	306	403	
4	HERB HALAUXIFEN-METHYL HERB 2,4-D ESTER LV	.570833325	LBAE/GAL	SC	1 oz/a	30	DBP	A	104	201	303	407	
		5.6	LBAE/GAL	EC	11.4 oz/a	30	DBP	A					
5	HERB HALAUXIFEN-METHYL HERB 2,4-D ESTER LV	.570833325	LBAE/GAL	SC	2 oz/a	30	DBP	A	105	207	304	401	
		5.6	LBAE/GAL	EC	22.9 oz/a	30	DBP	A					
6	HERB 2,4-D ESTER LV		5.6 LBAE/GAL	EC	11.4 oz/a	30	DBP	A	106	204	302	405	
7	HERB CLARITY	4.00016642	LBAE/GAL	SL	8 oz/a	30	DBP	A	107	203	301	404	

Sort Order: Replicate 1

### General Trial Information

**Study Director:** Larry Steckel  
**Investigator:** Dr. Larry Steckel

**Planned Completion Date:** Oct-1-2017

### Trial Location

**Country:** USA United States

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Objectives:

What is the crop tolerance to Arylex applied at 30 DBP alone and in combination with 2,4-D and glyphosate for cotton compared with industry standards?

### Contacts

**Study Director:** Larry Steckel

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI *Gossypium hirsutum* American upland cotton  
**Variety:** PHY490W3FE      **BBCH Scale:** BCOT  
**Description:** ENLIST  
**Planting Rate, Unit:** 4 S/FT      **Planting Date:** May-1-2017  
**Depth, Unit:** 0.5 IN      **Planting Method:** PLANTD planted  
**Row Spacing, Unit:** 38 IN      **Planting Equipment:** PP Plot Planter  
**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W      **Code:** LAMAM *Lamium amplexicaule*  
**Common Name:** Henbit  
**Pest 2 Type:** W      **Code:** ANNGR Annual Grasses  
**Pest 3 Type:** W      **Code:** CAPBP *Capsella bursa-pastoris*  
**Common Name:** Shepherd's purse  
**Pest 4 Type:** W      **Code:** CERVU *Cerastium fontanum vulgare*  
**Common Name:** Mouse-ear chickweed

### Site and Design

**Treated Plot Width:** 9.5 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 285 FT2      **Treatments:** 7      **Tillage Type:** NOTILL no-till  
**Replications:** 4      **Study Design:** RACOB� Randomized Complete Block (RCB)  
 -1869F

# University of Tennessee

## Burndown Plant-Back Timing in Cotton

Trial ID: NA17D2C011      Location: Jackson      Trial Year: 2017  
 Protocol ID: NA17D2C011      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: Larry Steckel  
                                  Sponsor Contact: Drew Ellis

### Field Prep./Maintenance:

SPRAYED 3/28 DURANGO 10 FT BOOM AIXR 002 32 PSI 4 MPH 15 GPA

PLANTED 5/1/17

5/2/17 32 OZ/A COTORAN + 32 OZ/A PARAZONE JD5300 AIXR 015 15 GPA 4 MPH

5/22 0.25 LB/A ORTHENE

5/30 56.5 oz/a enlist + 16 oz dual

5/31 0.25 lb/a orthene

### Application Description

	A
Application Date:	Mar-28-2017
Appl. Start Time:	7:46 am
Appl. Stop Time:	7:55 AM
Application Method:	SPRAY
Application Timing:	BURNDOWN
Application Placement:	BROSOI
Applied By:	JR
Air Temperature, Unit:	61 F
% Relative Humidity:	81.5
Wind Velocity, Unit:	3.5 MPH
Wind Direction:	NW
Dew Presence (Y/N):	Y yes
Soil Temperature, Unit:	56.8 F
Soil Moisture:	MOIST
% Cloud Cover:	10

### Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GOSHI BCOT

### Pest Stage At Each Application

	A
Pest 1 Code, Type, Scale:	LAMAM W
Height, Unit:	10 in
Pest 2 Code, Type, Scale:	ANNGR W
Height, Unit:	3 in
Pest 3 Code, Type, Scale:	CAPBP W
Height, Unit:	15 in
Pest 4 Code, Type, Scale:	CERVU W
Height, Unit:	6 in



# University of Tennessee

## Burndown Plant-Back Timing in Cotton

Trial ID: NA17D2C011      Location: Jackson      Trial Year: 2017  
 Protocol ID: NA17D2C011      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: Larry Steckel  
 Sponsor Contact: Drew Ellis

### Application Equipment

	A
<b>Appl. Equipment:</b>	BACKPACK
<b>Equipment Type:</b>	BACCAI
<b>Operation Pressure, Unit:</b>	33 PSI
<b>Nozzle Type:</b>	AIXR
<b>Nozzle Size:</b>	025
<b>Nozzle Spacing, Unit:</b>	19 IN
<b>Nozzles/Row:</b>	2
<b>Boom Length, Unit:</b>	6.33 FT
<b>Boom Height, Unit:</b>	18 IN
<b>Ground Speed, Unit:</b>	4 MPH
<b>Carrier:</b>	WATER
<b>Spray Volume, Unit:</b>	15 GAL/AC
<b>Mix Size, Unit:</b>	0.528 gallons
<b>Propellant:</b>	CO2

# University of Tennessee

## Xtend Cotton Herbicide Program with FeXapan

Trial ID: USA-17-300      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: USA-17-300      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact:

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check								101	211	302	409	
2	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	fl oz/a	PRE	A	102	210	311	402	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	1.60	pt/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	1.00	pt/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	C					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	C					
3	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	fl oz/a	PRE	A	103	201	304	403	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	1.60	pt/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	1.00	pt/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	C					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	C					
	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	2.00	fl oz/a	2-4"	C					
4	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	fl oz/a	PRE	A	104	207	309	407	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	1.60	pt/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	1.00	pt/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	C					
	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	2.00	fl oz/a	2-4"	C					
5	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	fl oz/a	PRE	A	105	202	308	411	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	1.60	pt/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	fl oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	1.00	pt/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	fl oz/a	2-4"	C					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	fl oz/a	2-4"	C					
	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	2.00	fl oz/a	2-4"	C					
6	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	fl oz/a	PRE	A	106	205	306	410	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	1.60	pt/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	B					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	B					
	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	2.00	oz/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	C					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	oz/a	2-4"	C					
7	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	oz/a	PRE	A	107	203	301	406	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	25.6	oz/a	PRE	A					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	16	oz/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	C					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	C					
	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	2.00	oz/a	2-4"	C					
8	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	oz/a	PRE	A	108	209	305	404	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	25.6	oz/a	PRE	A					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	16	oz/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	C					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	oz/a	2-4"	C					
9	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	oz/a	PRE	A	109	206	303	401	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	25.6	oz/a	PRE	A					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	16	oz/a	2-4"	B					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	C					
10	HERB STAPLE LX (SL 3.2 LG)	3.2	LB/GAL	SL	1.50	oz/a	PRE	A	110	208	307	408	
	HERB COTORAN 4L (4SC)	4	LB/GAL	SC	25.6	oz/a	PRE	A					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	16	oz/a	2-4"	B					
	HERB LIBERTY (2.34 SL)	2.34	LB/GAL	SL	29.00	oz/a	2-4"	C					

# University of Tennessee

## Xtend Cotton Herbicide Program with FeXapan

Trial ID: USA-17-300 Location: JACKSON TN Trial Year: 2017  
 Protocol ID: USA-17-300 Investigator: Dr. Larry Steckel  
 Project ID: Study Director: LARRY STECKEL  
 Sponsor Contact:

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
11	HERB COTORAN	4	LB/GAL	SC	25.6	oz/a	PRE	A	111	204	310	405	
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	B					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	oz/a	2-4"	B					
	HERB CINCH (7.64EC)	7.64	LB/GAL	EC	16	oz/a	2-4"	B					
	HERB ABUNDIT EDGE (SL 5.5 LG)	5.5	LB/GAL	SL	25.60	oz/a	2-4"	C					
	HERB FEXAPAN (SL 2.9 LG)	2.9	LB/GAL	SL	22.00	oz/a	2-4"	C					

Sort Order: Replicate 1

### General Trial Information

**Study Director:** LARRY STECKEL  
**Investigator:** Dr. Larry Steckel

### Trial Location

**Country:** USA United States

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Objectives:

Evaluate Staple LX in an Xtend program for increased postemergence and/or residual control of key problem weeds in cotton when applied with Liberty and FeXapan herbicides.

### Contacts

**Study Director:** LARRY STECKEL

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI Gossypium hirsutum American upland cotton  
**Variety:** DP1518B2XF **BBCH Scale:** BCOT

**Planting Date:** May-1-2017

**Planting Rate, Unit:** 4 S/FT

**Planting Method:** PLANTD planted

**Depth, Unit:** 0.5 IN

**Planting Equipment:** PP Plot Planter

**Row Spacing, Unit:** 38 IN

**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth

**Pest 2 Type:** W **Code:** IPOLA *Ipomoea lacunosa*  
**Common Name:** Pitted morningglory

**Pest 3 Type:** W **Code:** ANNGR Annual Grasses

**Pest 4 Type:** W **Code:** SIDSP *Sida spinosa*  
**Common Name:** Teaweed

### Site and Design

**Treated Plot Width:** 6.33 FT

**Site Type:** FIELD field

**Treated Plot Length:** 30 FT

**Treated Plot Area:** 189.9 FT<sup>2</sup> **Treatments:** 11

**Tillage Type:** CONTIL conventional-till

**Replications:** 3

**Study Design:** RACOB� Randomized Complete Block (RCB)

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup weathermax + 8 oz/a clarity

PLANTED 5/1

5/2 48 OZ/A GRAMOXONE

5/9 johnsongrass 16 oz/a select max + 1% coc

5/22 0.25 LB/A ORTHENE

5/31 0.25 lb/a orthene

# University of Tennessee

## Xtend Cotton Herbicide Program with FeXapan

Trial ID: USA-17-300  
 Protocol ID: USA-17-300  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact:

### Application Description

	A	B	C
<b>Application Date:</b>	May-3-2017	May-23-2017	Jun-6-2017
<b>Appl. Start Time:</b>	6:46	8:42 AM	9:22 AM
<b>Appl. Stop Time:</b>	6:59 AM	8:53 AM	9:33 AM
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	POST	POST
<b>Application Placement:</b>	BROSOI	BROSOI	BROSOI
<b>Applied By:</b>	DC	DC	DC
<b>Air Temperature, Unit:</b>	59 F	64 F	78 F
<b>% Relative Humidity:</b>	68	62	72
<b>Wind Velocity, Unit:</b>	6 MPH	2.5 MPH	4 MPH
<b>Wind Direction:</b>	S	NW	ESE
<b>Dew Presence (Y/N):</b>	Y yes	Y yes	N no
<b>Soil Temperature, Unit:</b>	58.6 F	63 F	74 F
<b>Soil Moisture:</b>	NORM	NORM	NORM
<b>% Cloud Cover:</b>	10	0	25

### Crop Stage At Each Application

	A	B	C
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>		2 LF	6 LF

### Pest Stage At Each Application

	A	B	C
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W	AMAPA W
<b>Height, Unit:</b>		3 IN	3 IN
<b>Height Minimum, Maximum:</b>			2 4
<b>Pest 2 Code, Type, Scale:</b>	IPOLA W	IPOLA W	IPOLA W
<b>Stage Majority, Percent:</b>		COT-2L	COT-2L
<b>Pest 3 Code, Type, Scale:</b>	ANNGR W	ANNGR W	ANNGR W
<b>Height, Unit:</b>		1 IN	
<b>Pest 4 Code, Type, Scale:</b>	SIDSP W	SIDSP W	SIDSP W
<b>Stage Majority, Percent:</b>		COT-2L	COTY

### Application Equipment

	A	B	C
<b>Appl. Equipment:</b>	BACKPACK	BACKPACK	BACKPACK
<b>Equipment Type:</b>	BACCAI	BACCAI	BACCAI
<b>Operation Pressure, Unit:</b>	33 PSI	28 PSI	28 PSI
<b>Nozzle Type:</b>	AIXR	TTI	TTI
<b>Nozzle Size:</b>	025	003	003
<b>Nozzle Spacing, Unit:</b>	19 IN	19 IN	19 IN
<b>Nozzles/Row:</b>	2	2	2
<b>Boom Length, Unit:</b>	6.33 FT	6.33 FT	6.33 FT
<b>Boom Height, Unit:</b>	18 IN	18 IN	18 IN
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH	4 MPH
<b>Carrier:</b>	WATER	WATER	WATER
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC	15 GAL/AC
<b>Mix Size, Unit:</b>	0.528 gallons	0.528 gallons	0.528 gallons
<b>Propellant:</b>	CO2	CO2	CO2
<b>Tank Mix (Y/N):</b>	Y yes	Y yes	Y yes

# University of Tennessee

## Xtend Cotton Herbicide Program with FeXapan

Trial ID: USA-17-300      Location: JACKSON TN      Trial Year: 2017  
Protocol ID: USA-17-300      Investigator: Dr. Larry Steckel  
Project ID:      Study Director: LARRY STECKEL  
Sponsor Contact:

# University of Tennessee

## Resicore: Corn to Cotton Rotation

Trial ID: NA16R3K005      Location:      Trial Year: 2017  
 Protocol ID: NA16R3K005      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director:  
    Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	HERB FULTIME NXT HERB DURANGO DMA	4.04	LBAE/GAL	ZC	2.9	qt/a	PRE	A	101	203	301	406	
	HERB AATREX L	4	LBAE/GAL	SL	1	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	VAR COTTON, PHY495W3RF			SC	1	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
								D					
2	HERB DURANGO DMA HERB AATREX L HERB RESICORE HERBICIDE	4	LBAE/GAL	SL	1	qt/a	PRE	A	102	202	306	401	
	HERB DURANGO DMA	4	LBAE/GAL	SC	1	qt/a	PRE	A					
	HERB RESICORE HERBICIDE	3.298	LBAE/GAL	SE	1.5	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	HERB DURANGO DMA	4	LBAE/GAL	SL	1.5	pt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	HERB AATREX L	4	LBAE/GAL	SC	1	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	VAR COTTON, PHY495W3RF							D					
3	HERB RESICORE HERBICIDE HERB AATREX L HERB RESICORE HERBICIDE	3.298	LBAE/GAL	SE	1.25	qt/a	PRE	A	103	206	304	404	
	HERB AATREX L	4	LBAE/GAL	SC	1.0	qt/a	PRE	A					
	HERB RESICORE HERBICIDE	3.298	LBAE/GAL	SE	1.25	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	HERB AATREX L	4	LBAE/GAL	SC	1	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	VAR COTTON, PHY495W3RF							D					
4	HERB RESICORE HERBICIDE HERB DURANGO DMA HERB AATREX L VAR COTTON, PHY495W3RF	3.298	LBAE/GAL	SE	2.25	qt/a	V1 - V2 STAGE	B	104	205	302	403	
	HERB DURANGO DMA	4	LBAE/GAL	SL	1.0	qt/a	V1 - V2 STAGE	B					
	HERB AATREX L	4	LBAE/GAL	SC	1.0	qt/a	V1 - V2 STAGE	B					
	VAR COTTON, PHY495W3RF							D					
5	HERB DURANGO DMA HERB AATREX L HERB HALEX GT	4	LBAE/GAL	SL	1.0	qt/a	PRE	A	105	201	305	402	
	HERB AATREX L	4	LBAE/GAL	SC	1.0	qt/a	PRE	A					
	HERB HALEX GT	4.368	LBAE/GAL	SC	3.6	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	HERB DURANGO DMA	4	LBAE/GAL	SL	1.0	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	HERB AATREX L	4	LBAE/GAL	SC	1.0	qt/a	APPLY TO 2-4" WEEDS OR 11IN CORN CUTOFF	C					
	VAR COTTON, PHY495W3RF							D					
6	CHK UNTREATED VAR COTTON, PHY495W3RF							ABC D	106	204	303	405	

Sort Order: Replicate 1

### General Trial Information

Investigator: Dr. Larry Steckel

Conducted Under GLP: No  
 Conducted Under GEP: No

#### Objectives:

Can the rotational interval of cotton following corn treated with Resicore be reduced to 10.5 - 12 months?

Investigator: Dr. Larry Steckel

# University of Tennessee

## Resicore: Corn to Cotton Rotation

Trial ID: NA16R3K005      Location:      Trial Year: 2017  
 Protocol ID: NA16R3K005      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director:  
                          Sponsor Contact:

Crop Description	
<p><b>Crop 1:</b> ZEAMX Zea mays      Corn  <b>Description:</b> GLU/GLY TOL  <b>BBCH Scale:</b> BCOR</p> <p><b>Crop 2:</b> GOSHI Gossypium hirsutum      American upland cotton  <b>Variety:</b> PHY490W3FE      <b>BBCH Scale:</b> BCOT  <b>Description:</b> plant back</p> <p><b>Planting Rate, Unit:</b> 4 S/FT  <b>Depth, Unit:</b> 0.5 IN  <b>Row Spacing, Unit:</b> 38 IN</p>	<p><b>Planting Date:</b> May-1-2017  <b>Planting Method:</b> PLANTD planted  <b>Planting Equipment:</b> PP Plot Planter  <b>Emergence Date:</b> May-9-2017</p>

Site and Design	
<p><b>Treated Plot Width:</b> 10 FT  <b>Treated Plot Length:</b> 30 FT  <b>Treated Plot Area:</b> 300 FT<sup>2</sup>      <b>Treatments:</b> 6  <b>Replications:</b> 4                      -1869F</p>	<p><b>Study Design:</b> RACOB� Randomized Complete Block (RCB)</p>

**Field Prep./Maintenance:**  
 3/20/17 32 oz/a roundup weathermax + 8 oz/a clarity

planted 5/1  
 Cotoran 32 oz/a + 48 oz/a gramoxone

5/22 0.25 LB/A ORTHENE  
 5/30 56.5 oz/a enlist duo + 16 oz/a dual  
 5/31 0.25 lb/a orthene

Crop Stage At Each Application				
	A	B	C	D
<b>Crop 1 Code, BBCH Scale:</b>	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR	ZEAMX BCOR
<b>Crop 2 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT

# University of Tennessee

## XTEND COTTON TOLERANCE TEST

Trial ID: JCTXTENDTOL17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: JCTXTENDTOL17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Growth Unit	Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check								101	209	305	408	
2	HERB LIBERTY	2.34		SL	29 oz/a	2L		A	102	208	301	410	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB LIBERTY	2.34		SL	29 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
3	HERB LIBERTY	2.34		SL	29 oz/a	2L		A	103	210	306	404	
	HERB WARRANT	3	LB/GAL	SL	48 oz/a	2L		A					
	HERB LIBERTY	2.34		SL	29 oz/a	4L		B					
	HERB WARRANT	3	LB/GAL	SL	48 oz/a	4L		B					
4	HERB LIBERTY	2.34		SL	29 oz/a	2L		A	104	207	309	411	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB DUAL MAGNUM	7.62		EC	16 oz/a	2L		A					
	HERB LIBERTY	2.34		SL	29 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB DUAL MAGNUM	7.62		EC	16 oz/a	4L		B					
5	HERB LIBERTY	2.34		SL	29 oz/a	2L		A	105	203	307	405	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB OUTLOOK	6		SC	12 oz/a	2L		A					
	HERB LIBERTY	2.34		SL	29 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB OUTLOOK	6		SC	12 oz/a	4L		B					
6	HERB LIBERTY	2.34		SL	29 oz/a	2L		A	106	202	311	402	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB ZIDUA	85		WG	2 oz/a	2L		A					
	HERB LIBERTY	2.34		SL	29 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB ZIDUA	85		WG	1 oz/a	4L		B					
7	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	2L		A	107	201	303	406	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
8	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	2L		A	108	211	308	409	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB WARRANT	3	LB/GAL	SL	48 oz/a	2L		A					
	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB WARRANT	3	LB/GAL	SL	48 oz/a	4L		B					
9	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	2L		A	109	204	302	403	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB DUAL MAGNUM	7.62		EC	16 oz/a	2L		A					
	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB DUAL MAGNUM	7.62		EC	16 oz/a	4L		B					
10	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	2L		A	110	206	310	407	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB OUTLOOK	6		SC	12 oz/a	2L		A					
	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB OUTLOOK	6		SC	12 oz/a	4L		B					
11	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	2L		A	111	205	304	401	
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	2L		A					
	HERB ZIDUA	85		WG	2 oz/a	2L		A					
	HERB ENGENIA	5	LBAE/GAL	L	12.8 oz/a	4L		B					
	HERB ROUNDUP POWERMAX	4.5	LBAE/GAL	SL	32 oz/a	4L		B					
	HERB ZIDUA	85		WG	1 oz/a	4L		B					

Sort Order: Replicate 1



# University of Tennessee

## XTEND COTTON TOLERANCE TEST

Trial ID: JCTXTENDTOL17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: JCTXTENDTOL17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact:

### General Trial Information

**Study Director:** LARRY STECKEL  
**Investigator:** Dr. Larry Steckel

### Trial Location

**Country:** USA United States

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Contacts

**Study Director:** LARRY STECKEL

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI *Gossypium hirsutum* American upland cotton  
**Variety:** DP1518B2XF      **BBCH Scale:** BCOT  
**Description:** XTENDFLEX  
**Planting Rate, Unit:** 4 S/FT      **Planting Date:** May-1-2017  
**Depth, Unit:** 0.5 IN      **Planting Method:** PLANTD planted  
**Row Spacing, Unit:** 38 IN      **Planting Equipment:** PP Plot Planter  
**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W      **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth  
**Pest 2 Type:** W      **Code:** IPOLA *Ipomoea lacunosa*  
**Common Name:** Pitted morningglory  
**Pest 3 Type:** W      **Code:** ANNGR Annual Grasses  
**Pest 4 Type:** W      **Code:** SIDSP *Sida spinosa*  
**Common Name:** Teaweed

### Site and Design

**Treated Plot Width:** 6.33 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 189.9 FT<sup>2</sup>      **Treatments:** 11      **Tillage Type:** NOTILL no-till  
**Replications:** 4      **Study Design:** RACOBL Randomized Complete Block (RCB)

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup powermax + 8 oz/a clarity

5/1 PLANTED

5/2 48 OZ GRAMOXONE

5/22 0.25 lb/a orthene

5/31 0.25 lb/a orthene

# University of Tennessee

## XTEND COTTON TOLERANCE TEST

Trial ID: JCTXTENDTOL17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: JCTXTENDTOL17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact:

### Application Description

	A	B
<b>Application Date:</b>	May-23-2017	Jun-1-2017
<b>Appl. Start Time:</b>	8:17 AM	10:25 AM
<b>Appl. Stop Time:</b>	8:30 AM	10:38 AM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	2 LEAF	4 LEAF
<b>Application Placement:</b>	BROSOI	BROSOI
<b>Applied By:</b>	DC	DC
<b>Air Temperature, Unit:</b>	76 F	80 F
<b>% Relative Humidity:</b>	60	65
<b>Wind Velocity, Unit:</b>	2 MPH	1.5 MPH
<b>Wind Direction:</b>	NW	W
<b>Dew Presence (Y/N):</b>	N no	N no
<b>Soil Temperature, Unit:</b>	70 F	77 F
<b>Soil Moisture:</b>	NORM	NORM
<b>% Cloud Cover:</b>	100	100

### Crop Stage At Each Application

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	2 LEAF	4 LEAF

### Pest Stage At Each Application

	A	B
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W
<b>Stage Majority, Percent:</b>	COTY	
<b>Height, Unit:</b>	0.5 IN	3 IN
<b>Pest 2 Code, Type, Scale:</b>	IPOLA W	IPOLA W
<b>Stage Majority, Percent:</b>	1-2L	
<b>Height, Unit:</b>	1 IN	3 IN
<b>Height Minimum, Maximum:</b>		2 4
<b>Pest 3 Code, Type, Scale:</b>	ANNGR W	ANNGR W
<b>Stage Majority, Percent:</b>	1-2L	
<b>Height, Unit:</b>	1 IN	
<b>Pest 4 Code, Type, Scale:</b>	SIDSP W	SIDSP W
<b>Stage Majority, Percent:</b>	COTY-1	
<b>Height, Unit:</b>	0.5 IN	2 IN

# University of Tennessee

## XTEND COTTON TOLERANCE TEST

Trial ID: JCTXTENDTOL17  
 Protocol ID: JCTXTENDTOL17  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact:

Application Equipment				
	A		B	
<b>Appl. Equipment:</b>	BACKPACK		BACKPACK	
<b>Equipment Type:</b>	BACCAI		BACCAI	
<b>Operation Pressure, Unit:</b>	33	PSI	33	PSI
<b>Nozzle Type:</b>	AIXR		AIXR/TTI	
<b>Nozzle Size:</b>	025		025/003	
<b>Nozzle Spacing, Unit:</b>	19	IN	19	IN
<b>Nozzles/Row:</b>	2		2	
<b>Boom Length, Unit:</b>	6.33 FT		6.33 FT	
<b>Boom Height, Unit:</b>	18 IN		18 IN	
<b>Ground Speed, Unit:</b>	4	MPH	4	MPH
<b>Carrier:</b>	WATER		WATER	
<b>Spray Volume, Unit:</b>	15	GAL/AC	15	GAL/AC
<b>Mix Size, Unit:</b>	0.528 gallons		0.528 gallons	
<b>Propellant:</b>	CO2		CO2	
<b>Tank Mix (Y/N):</b>	Y yes		Y yes	

# University of Tennessee

## ENGENIA VS COMPETITIVE SYSTEMS IN COTTON

Trial ID: MKD-H-2017US-F71  
 Protocol ID: MKD-H-2017-US-F71-C-02.0  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: Greg Stapleton  
 Sponsor Contact: G. STAPLETON

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check								101	207	302	401	
2	HERB PROWL H2O	455	GA/L	CS	32.0	oz/a	PRE	A	102	205	303	406	
	HERB COTORAN 4 L	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB ENGENIA	600	GA/L	SL	12.8	oz/a	EPOST	B					
	HERB ROUNDUP POWERMAX	540	GA/L	SL	32.0	oz/a	EPOST	B					
	PROD INDUCE	998	GA/L	TK	0.25	% v/v	EPOST	B					
	HERB ENGENIA	600	GA/L	SL	12.8	oz/a	MPOST	C					
	HERB ROUNDUP POWERMAX	540	GA/L	SL	32.0	oz/a	MPOST	C					
	PROD INDUCE	998	GA/L	TK	0.25	% v/v	MPOST	C					
3	HERB PROWL H2O	455	GA/L	CS	32.0	oz/a	PRE	A	103	202	305	408	
	HERB COTORAN 4 L	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB ENGENIA	600	GA/L	SL	12.8	oz/a	EPOST	B					
	HERB OUTLOOK	720.0	GA/L	EC	10.0	oz/a	EPOST	B					
	HERB ROUNDUP POWERMAX	540	GA/L	SL	32.0	oz/a	EPOST	B					
	PROD INDUCE	998	GA/L	TK	0.25	% v/v	EPOST	B					
	HERB ENGENIA	600	GA/L	SL	12.8	oz/a	MPOST	C					
	HERB OUTLOOK	720	GA/L	EC	10.0	oz/a	MPOST	C					
	HERB ROUNDUP POWERMAX	540	GA/L	SL	32.0	oz/a	MPOST	C					
	PROD INDUCE	998	GA/L	TK	0.25	% v/v	MPOST	C					
4	HERB PROWL H2O	455.0	GA/L	CS	32.0	oz/a	PRE	A	104	208	304	405	
	HERB COTORAN 4 L	480.0	GA/L	SC	32.0	oz/a	PRE	A					
	HERB ENGENIA	600.0	GA/L	SL	12.8	oz/a	EPOST	B					
	HERB ROUNDUP POWERMAX	540.0	GA/L	SL	32.0	oz/a	EPOST	B					
	PROD INDUCE	998.0	GA/L	TK	0.25	% v/v	EPOST	B					
	HERB LIBERTY	120	GA/L	EC	29.0	oz/a	MPOST	C					
	HERB OUTLOOK	720.0	GA/L	EC	10.0	oz/a	MPOST	C					
	PROD AMMONIUM SULFATE	21	%	SG	2.5	lb/a	MPOST	C					
5	HERB COTORAN 4 L	480.0	GA/L	SC	32.0	oz/a	PRE	A	105	201	306	407	
	HERB CAPAROL	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB LIBERTY	120	GA/L	EC	29.0	oz/a	EPOST	B					
	PROD AMMONIUM SULFATE	21	%	SG	2.5	lb/a	EPOST	B					
	HERB LIBERTY	120	GA/L	EC	29.0	oz/a	MPOST	C					
	PROD AMMONIUM SULFATE	21	%	SG	2.5	lb/a	MPOST	C					
6	HERB COTORAN 4 L	480.0	GA/L	SC	32.0	oz/a	PRE	A	106	204	308	402	
	HERB CAPAROL	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB LIBERTY	120	GA/L	EC	29.0	oz/a	EPOST	B					
	HERB OUTLOOK	720.0	GA/L	EC	10.0	oz/a	EPOST	B					
	PROD AMMONIUM SULFATE	21	%	SG	2.5	lb/a	EPOST	B					
	HERB LIBERTY	120	GA/L	EC	29.0	oz/a	MPOST	C					
	HERB OUTLOOK	720	GA/L	EC	10.0	oz/a	MPOST	C					
	PROD AMMONIUM SULFATE	21	%	SG	2.5	lb/a	MPOST	C					
7	HERB COTORAN 4 L	480.0	GA/L	SC	32.0	oz/a	PRE	A	107	203	301	404	
	HERB CAPAROL	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB XTENDIMAX WITH VAPORGRIP TECHN	350	GA/L	SL	22.0	oz/a	EPOST	B					
	HERB ROUNDUP POWERMAX	540.0	GA/L	SL	32.0	oz/a	EPOST	B					
	PROD INDUCE	998.0	GA/L	TK	0.25	% v/v	EPOST	B					
	HERB XTENDIMAX WITH VAPORGRIP TECHN	350	GA/L	SL	22.0	oz/a	MPOST	C					
	HERB ROUNDUP POWERMAX	540.0	GA/L	SL	32.0	oz/a	MPOST	C					
	PROD INDUCE	998.0	GA/L	TK	0.25	% v/v	MPOST	C					
8	HERB COTORAN 4 L	480.0	GA/L	SC	32.0	oz/a	PRE	A	108	206	307	403	
	HERB CAPAROL	480	GA/L	SC	32.0	oz/a	PRE	A					
	HERB XTENDIMAX WITH VAPORGRIP TECHN	350.0	GA/L	SL	22.0	oz/a	EPOST	B					
	HERB DUAL MAGNUM	915.0	GA/L	EC	16.0	oz/a	EPOST	B					
	HERB ROUNDUP POWERMAX	540.0	GA/L	SL	32.0	oz/a	EPOST	B					
	PROD INDUCE	998.0	GA/L	TK	0.25	% v/v	EPOST	B					
	HERB XTENDIMAX WITH VAPORGRIP TECHN	350.0	GA/L	SL	22.0	oz/a	MPOST	C					
	HERB DUAL MAGNUM	915	GA/L	EC	16.0	oz/a	MPOST	C					
	HERB ROUNDUP POWERMAX	540.0	GA/L	SL	32.0	oz/a	MPOST	C					
	PROD INDUCE	998.0	GA/L	TK	0.25	% v/v	MPOST	C					

Sort Order: Replicate 1

# University of Tennessee

## ENGENIA VS COMPETITIVE SYSTEMS IN COTTON

Trial ID: MKD-H-2017US-F71  
 Protocol ID: MKD-H-2017-US-F71-C-02.0  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: Greg Stapleton  
 Sponsor Contact: G. STAPLETON

### General Trial Information

**Study Director:** Greg Stapleton  
**Investigator:** Dr. Larry Steckel

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Objectives:

To demonstrate greater consistency and performance with Engenia vs. Liberty.

### Contacts

**Study Director:** Greg Stapleton

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI *Gossypium hirsutum* American upland cotton  
**Variety:** DP1518B2XF **BBCH Scale:** BCOT  
**Description:** XTENDFLEX  
**Planting Rate, Unit:** 4 S/FT  
**Depth, Unit:** 0.5 IN  
**Row Spacing, Unit:** 38 IN  
**Planting Date:** May-1-2017  
**Planting Method:** PLANTD planted  
**Planting Equipment:** PP Plot Planter  
**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W **Code:** IPOSS *Ipomoea* sp.  
**Common Name:** Morning glory  
**Pest 2 Type:** W **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth  
**Pest 3 Type:** W **Code:** SIDSP *Sida spinosa*  
**Common Name:** Teaweed

### Site and Design

**Treated Plot Width:** 6.33 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 189.9 FT<sup>2</sup> **Treatments:** 8  
**Replications:** 4  
**Study Design:** RACOB L Randomized Complete Block (RCB)

### Field Prep./Maintenance:

3/20/17 32 oz/a roundup powermax + 8 oz/a clarity  
 5/1 PLANTED  
 5/2 48 OZ GRAMOXONE  
 5/22 0.25LB/A ORTHENE  
 5/31 0.25 lb/a orthene

# University of Tennessee

## ENGENIA VS COMPETITIVE SYSTEMS IN COTTON

Trial ID: MKD-H-2017US-F71  
 Protocol ID: MKD-H-2017-US-F71-C-02.0  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: Greg Stapleton  
 Sponsor Contact: G. STAPLETON

### Application Description

	A	B	C
Application Date:	May-3-2017	May-30-2017	
Appl. Start Time:	7:04 AM	12:07 PM	
Appl. Stop Time:	7:11 AM	12:21 PM	
Application Method:	SPRAY	SPRAY	
Application Timing:	PRE	POST	NA3
Application Placement:	BROSOI	BROSOI	
Applied By:	DC	DC	
Air Temperature, Unit:	59 F	86 F	
% Relative Humidity:	68	50	
Wind Velocity, Unit:	6 MPH	1 MPH	
Wind Direction:	S	N	
Dew Presence (Y/N):	Y yes	N no	
Soil Temperature, Unit:	58.6 F	83 F	
Soil Moisture:	NORM	NORM	
% Cloud Cover:	10	10	

### Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT
Stage Scale Used:		3 LF	

### Pest Stage At Each Application

	A	B	C
Pest 1 Code, Type, Scale:	IPOSS W	IPOSS W	IPOSS W
Height, Unit:		2.5 IN	
Height Minimum, Maximum:		2 3	
Pest 2 Code, Type, Scale:	AMAPA W	AMAPA W	AMAPA W
Height, Unit:		2 IN	
Height Minimum, Maximum:		1 3	
Pest 3 Code, Type, Scale:	SIDSP W	SIDSP W	SIDSP W
Height, Unit:		1 IN	

### Application Equipment

	A	B	C
Appl. Equipment:	BACKPACK	BACKPACK	
Equipment Type:	BACCAI	BACCAI	
Operation Pressure, Unit:	33 PSI	28 PSI	
Nozzle Type:	AIXR	TTI	
Nozzle Size:	025	003	
Nozzle Spacing, Unit:	19 IN	19 IN	
Nozzles/Row:	2	2	
Boom Length, Unit:	6.33 FT	6.33 FT	
Boom Height, Unit:	18 IN	18 IN	
Ground Speed, Unit:	4 MPH	4 MPH	
Carrier:	WATER	WATER	
Spray Volume, Unit:	15 GAL/AC	15 GAL/AC	
Mix Size, Unit:	0.528 gallons	0.528 gallons	
Propellant:	CO2	CO2	
Tank Mix (Y/N):	Y yes	Y yes	

# University of Tennessee

## Crop Protection Market Development for Selective Chemistry - Cotton

Trial ID:                      Location:                      Trial Year:  
 Protocol ID:                Investigator: Dr. Larry Steckel  
 Project ID:                 Study Director: Anthony Mills  
                                  Sponsor Contact:

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate Rate	Growth Unit	Stage	Appl Code	Rep 1	2	3	4	Notes
1	HERB COTORAN 4L	4	LBA/GAL	SC	32	oz/a	PRE	A	101	202	301	403	
	HERB MON 76980	2.91	LBAE/GAL	SL	22	oz/a	PRE	A					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	2-4 LF	B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	2-4 LF	B					
	HERB MON 76980	2.91	LBAE/GAL	SL	22	oz/a	2-4 LF	B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	8 LF	C					
2	HERB COTORAN 4L	4	LBA/GAL	SC	32	oz/a	PRE	A	102	201	304	402	
	HERB MON 76980	2.91	LBAE/GAL	SL	22	oz/a	PRE	A					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	2-4 LF	B					
	HERB WARRANT	3	LB/GAL	CS	48	oz/a	2-4 LF	B					
	HERB MON 76980	2.91	LBAE/GAL	SL	22	oz/a	2-4 LF	B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	8 LF	C					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	LAYBY	D					
HERB DIURON	4	LB/GAL	SC	24	oz/a	LAYBY	D						
3	HERB COTORAN 4L	4	LBA/GAL	SC	32	oz/a	PRE	A	103	204	303	401	
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	2-4 LF	B					
	HERB DUAL MAGNUM	7.62	LB/GAL	EC	16	oz/a	2-4 LF	B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	8 LF	C					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	8 LF	C					
4	HERB COTORAN 4L	4	LBA/GAL	SC	32	oz/a	PRE	A	104	203	302	404	
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	2-4 LF	B					
	HERB DUAL MAGNUM	7.62	LB/GAL	EC	16	oz/a	2-4 LF	B					
	HERB LIBERTY 280 SL	2.34	LB/GAL	SL	31.7	oz/a	8 LF	C					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	8 LF	C					
	HERB ROUNDUP WEATHERMAX	4.5	LBAE/GAL	SL	28.4	oz/a	LAYBY	D					
	HERB DIURON	4	LB/GAL	SC	24	oz/a	LAYBY	D					

Sort Order: Replicate 1

<b>General Trial Information</b>	
<b>Study Director:</b> Anthony Mills <b>Investigator:</b> Dr. Larry Steckel	
<b>Trial Location</b>	
<b>Country:</b> USA United States  <b>Conducted Under GLP:</b> No <b>Conducted Under GEP:</b> No	

<b>Contacts</b>	
<b>Study Director:</b> Anthony Mills <b>Investigator:</b> Dr. Larry Steckel	

<b>Crop Description</b>	
<b>Crop 1:</b> GOSHI      Gossypium hirsutum      American upland cotton <b>Variety:</b> DP1518B2XF <b>BBCH Scale:</b> BCOT	<b>Planting Date:</b> May-1-2017 <b>Planting Rate, Unit:</b> 4    S/FT <b>Planting Method:</b> PLANTD planted <b>Depth, Unit:</b> 0.5 IN <b>Planting Equipment:</b> PP      Plot Planter <b>Row Spacing, Unit:</b> 38 IN <b>Emergence Date:</b> May-9-2017

<b>Pest Description</b>	
<b>Pest 1 Type:</b> W <b>Code:</b> IPOLA Ipomoea lacunosa <b>Common Name:</b> Pitted morningglory	

<b>Site and Design</b>	
<b>Treated Plot Width:</b> 9.5 FT <b>Site Type:</b> FIELD    field <b>Treated Plot Length:</b> 30 FT <b>Treated Plot Area:</b> 285 FT2 <b>Treatments:</b> 4 <b>Tillage Type:</b> NOTILL no-till <b>Replications:</b> 4 <b>Study Design:</b> RACOB� Randomized Complete Block (RCB) 7 DAB, 7 DAC	

# University of Tennessee

## Crop Protection Market Development for Selective Chemistry - Cotton

Trial ID:                    Location:                    Trial Year:  
 Protocol ID:                Investigator: Dr. Larry Steckel  
 Project ID:                 Study Director: Anthony Mills  
                                  Sponsor Contact:

**Field Prep./Maintenance:**

3/20/17 32 oz/a roundup powermax + 8 oz/a clarity  
 5/2/17 48 oz gramoxone  
 5/22/16 0.25 orthene  
 5/31 0.25 lb/a orthene

**Application Description**

	A	B	C	D
<b>Application Date:</b>	May-3-2017	May-23-2017		
<b>Appl. Start Time:</b>	7:20 AM	8:32 AM		
<b>Appl. Stop Time:</b>	7:28 AM	8:40 AM		
<b>Application Method:</b>	SPRAY	SPRAY		
<b>Application Timing:</b>	PRE	POST		
<b>Application Placement:</b>	BROSOI	BROSOI		
<b>Applied By:</b>	DC	DC		
<b>Air Temperature, Unit:</b>	57.2 F	76 F		
<b>% Relative Humidity:</b>	69.8	60		
<b>Wind Velocity, Unit:</b>	6 MPH	2 MPH		
<b>Wind Direction:</b>	S	N		
<b>Dew Presence (Y/N):</b>	Y yes	N no		
<b>Soil Temperature, Unit:</b>	58 F	70 F		
<b>Soil Moisture:</b>	NORMAL	NORM		
<b>% Cloud Cover:</b>	20	100		

**Crop Stage At Each Application**

	A	B	C	D
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT	GOSHI BCOT

**Pest Stage At Each Application**

	A	B	C	D
<b>Pest 1 Code, Type, Scale:</b>	IPOLA W	IPOLA W	IPOLA W	IPOLA W
<b>Stage Majority, Percent:</b>		COTY-1		
<b>Height Minimum, Maximum:</b>		0.5 1		

**Application Equipment**

	A	B	C	D
<b>Appl. Equipment:</b>	BACKPACK	BACKPACK		
<b>Equipment Type:</b>	BACCAI	BACCAI		
<b>Operation Pressure, Unit:</b>	30 PSI	28 PSI		
<b>Nozzle Type:</b>	TTI	TTI		
<b>Nozzle Size:</b>	003	11003		
<b>Nozzle Spacing, Unit:</b>	19 IN	19 IN		
<b>Nozzles/Row:</b>	2	2		
<b>Boom Length, Unit:</b>	6.33 FT	6.33 FT		
<b>Boom Height, Unit:</b>	18 IN	18 IN		
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH		
<b>Carrier:</b>	WATER	WATER		
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC		
<b>Mix Size, Unit:</b>	0.528 gallons	0.528 gallons		
<b>Propellant:</b>	CO2	CO2		
<b>Tank Mix (Y/N):</b>	N no	Y yes		



# University of Tennessee

## BRAKE SELECTIVITY IN COTTON

Trial ID: JCTSEPRO17 Location: JACKSON TN Trial Year: 2017  
 Protocol ID: JCTSEPRO17 Investigator: Dr. Larry Steckel  
 Project ID: Study Director: LARRY STECKEL  
 Sponsor Contact: KYLE BRISCOE

Trt No.	Treatment Type Name	Form Conc	Form Unit	Form Type	Rate	Growth Stage	Appl Code	Rep 1	Rep 2	Rep 3	Rep 4	Notes
1	CHK Untreated Check							101	204	302	401	
2	HERB BRAKE HERB LIBERTY	1.2 2.34	LBA/GAL	L SL	22 oz/a 29 oz/a	PRE POST	A B	102	205	304	402	
3	HERB BRAKE HERB ENGENIA HERB LIBERTY	1.2 5 2.34	LBAE/GAL	L L SL	16 oz/a 12.8 oz/a 29 oz/a	PRE PRE POST	A A B	103	206	305	403	
4	HERB BRAKE HERB COTORAN HERB LIBERTY	1.2 4 2.34	LBAE/GAL	L L SL	16 oz/a 24 oz/a 29 oz/a	PRE PRE POST	A A B	104	202	303	406	
5	HERB BRAKE FX -FLURIDONE -FLUOMETURON HERB LIBERTY	3.6 0.6 3 2.34	LB/GAL	SL	32 oz/a 29 oz/a	PRE POST	A B	105	203	306	405	
6	HERB COTORAN HERB CAPAROL HERB LIBERTY	4 4 2.34	LBA/GAL	L SC SL	32 oz/a 32 oz/a 29 oz/a	PRE PRE POST	A A B	106	201	301	404	

Sort Order: Replicate 1

### General Trial Information

**Study Director:** LARRY STECKEL  
**Investigator:** Dr. Larry Steckel

### Trial Location

**Country:** USA United States

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Contacts

**Study Director:** LARRY STECKEL

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI Gossypium hirsutum American upland cotton  
**Variety:** DP1518B2XF **BBCH Scale:** BCOT

**Planting Date:** May-1-2017  
**Planting Rate, Unit:** 4 S/FT  
**Planting Method:** PLANTD planted  
**Depth, Unit:** 0.5 IN **Planting Equipment:** PP Plot Planter  
**Row Spacing, Unit:** 38 IN

### Pest Description

**Pest 1 Type:** W **Code:** AMAPA *Amaranthus palmeri*  
**Common Name:** Palmer amaranth

**Pest 2 Type:** W **Code:** ANNGR Annual Grasses

**Pest 3 Type:** W **Code:** IPOLA *Ipomoea lacunosa*  
**Common Name:** Pitted morningglory

**Pest 4 Type:** W **Code:** SIDSP *Sida spinosa*  
**Common Name:** Teaweed

### Site and Design

**Treated Plot Width:** 6.33 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 189.9 FT<sup>2</sup> **Treatments:** 6 **Tillage Type:** NOTILL no-till  
**Replications:** 4 **Study Design:** RACOB� Randomized Complete Block (RCB)

# University of Tennessee

## BRAKE SELECTIVITY IN COTTON

Trial ID: JCTSEPRO17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: JCTSEPRO17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
                                  Sponsor Contact: KYLE BRISCOE

**Field Prep./Maintenance:**

3/20/17 32 oz/a roundup powermax + 8 oz/a clarity  
 5/2 48 OZ GRAMOXONE  
 5/22 0.25 lb/a orthene  
 5/31 0.25 lb/a orthene

**Application Description**

	A	B
<b>Application Date:</b>	May-3-2017	May-30-2017
<b>Appl. Start Time:</b>	6:26 AM	11:08 AM
<b>Appl. Stop Time:</b>	6:39 AM	11:16 AM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	POST
<b>Application Placement:</b>	BROSOI	BROSOI
<b>Applied By:</b>	DC	DC
<b>Air Temperature, Unit:</b>	57 F	87 F
<b>% Relative Humidity:</b>	69	49
<b>Wind Velocity, Unit:</b>	6 MPH	2 MPH
<b>Wind Direction:</b>	S	N
<b>Dew Presence (Y/N):</b>	Y yes	N no
<b>Soil Temperature, Unit:</b>	58 F	81 F
<b>Soil Moisture:</b>	NORMAL	NORM
<b>% Cloud Cover:</b>	20	10

**Crop Stage At Each Application**

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>		3 LF

**Pest Stage At Each Application**

	A	B
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W
<b>Height, Unit:</b>		4 IN
<b>Pest 2 Code, Type, Scale:</b>	ANNGR W	ANNGR W
<b>Height, Unit:</b>		2.5 IN
<b>Height Minimum, Maximum:</b>		2 3
<b>Pest 3 Code, Type, Scale:</b>	IPOLA W	IPOLA W
<b>Height Minimum, Maximum:</b>		2 3
<b>Pest 4 Code, Type, Scale:</b>	SIDSP W	SIDSP W
<b>Height, Unit:</b>		2 IN

# University of Tennessee

## BRAKE SELECTIVITY IN COTTON

Trial ID: JCTSEPRO17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: JCTSEPRO17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact: KYLE BRISCOE

				Application Equipment	
	A		B		
<b>Appl. Equipment:</b>	BACKPACK		BACKPACK		
<b>Equipment Type:</b>	BACCAI		BACCAI		
<b>Operation Pressure, Unit:</b>	30	PSI	33	PSI	
<b>Nozzle Type:</b>	TTI		AIXR		
<b>Nozzle Size:</b>	003		025		
<b>Nozzle Spacing, Unit:</b>	19 IN		19 IN		
<b>Nozzles/Row:</b>	2		2		
<b>Boom Length, Unit:</b>	6.33 FT		6.33 FT		
<b>Boom Height, Unit:</b>	18 IN		18 IN		
<b>Ground Speed, Unit:</b>	4 MPH		4 MPH		
<b>Carrier:</b>	WATER		WATER		
<b>Spray Volume, Unit:</b>	15	GAL/AC	15	GAL/AC	
<b>Mix Size, Unit:</b>	0.528 gallons		0.528 gallons		
<b>Propellant:</b>	CO2		CO2		
<b>Tank Mix (Y/N):</b>	Y yes		N no		

# University of Tennessee

## New Herbicide Mixtures in Xtend Cotton

Trial ID: SYNXTEND17      Location: JACKSON TN      Trial Year: 2017  
 Protocol ID: SYNXTEND17      Investigator: Dr. Larry Steckel  
 Project ID:      Study Director: LARRY STECKEL  
 Sponsor Contact: JAMES HOLLOWAY

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate	Rate Unit	Growth Stage	Appl Code	Rep 1	2	3	4	Notes
1	CHK Untreated Check								101	203	307	404	
2	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		PRE	A	102	201	306	402	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		EPOST	B					
	HERB ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a		EPOST	B					
3	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		PRE	A	103	207	303	401	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a		EPOST	B					
	HERB XTENDIMAX	2.9 LBAE/GAL		SC	22 oz/a		EPOST	B					
4	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		PRE	A	104	205	305	407	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		EPOST	B					
	HERB LIBERTY	2.34		SL	29 oz/a		EPOST	B					
5	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		PRE	A	105	204	302	406	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB XTENDIMAX	2.9 LBAE/GAL		SC	22 oz/a		EPOST	B					
	HERB LIBERTY	2.34		SL	29 oz/a		EPOST	B					
6	HERB CAPAROL	4 LBA/GAL		SC	32 oz/a		PRE	A	106	206	304	403	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		EPOST	B					
	HERB LIBERTY	2.34		SL	29 oz/a		EPOST	B					
7	HERB CAPAROL	4 LBA/GAL		SC	32 oz/a		PRE	A	107	202	301	405	
	HERB GRAMOXONE SL	2		SL	40 oz/a		PRE	A					
	ADJ INDUCE	100 %		SL	0.25 % v/v		PRE	A					
	HERB TAVIUM PLUS VAPORGRIP			SC	56.5 oz/a		EPOST	B					
	HERB ROUNDUP POWERMAX	4.5 LBAE/GAL		SL	32 oz/a		EPOST	B					

Sort Order: Replicate 1

### General Trial Information

**Study Director:** LARRY STECKEL  
**Investigator:** Dr. Larry Steckel

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

### Contacts

**Study Director:** LARRY STECKEL

**Investigator:** Dr. Larry Steckel

### Crop Description

**Crop 1:** GOSHI      Gossypium hirsutum      American upland cotton  
**Variety:** DP1518B2XF      **BBCH Scale:** BCOT

**Planting Rate, Unit:** 4      S/FT      **Planting Date:** May-1-2017  
**Depth, Unit:** 0.5 IN      **Planting Method:** PLANTD planted  
**Row Spacing, Unit:** 38 IN      **Planting Equipment:** PP      Plot Planter  
**Emergence Date:** May-9-2017

### Pest Description

**Pest 1 Type:** W      **Code:** AMAPA      *Amaranthus palmeri*  
**Common Name:** Palmer amaranth

**Pest 2 Type:** W      **Code:** IPOLA      *Ipomoea lacunosa*  
**Common Name:** Pitted morningglory

# University of Tennessee

## New Herbicide Mixtures in Xtend Cotton

Trial ID: SYNXTEND17  
 Protocol ID: SYNXTEND17  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact: JAMES HOLLOWAY

### Site and Design

**Treated Plot Width:** 6.33 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 189.9 FT<sup>2</sup> **Treatments:** 7  
**Replications:** 4 **Study Design:** RACOB L Randomized Complete Block (RCB)

### Field Prep./Maintenance:

planted 5/1  
 5/2 48 oz/a gramoxone  
 5/22 0.25 LB/A ORTHENE  
 5/31 0.25 lb/a orthene

### Application Description

	A	B
<b>Application Date:</b>	May-3-2017	May-30-2017
<b>Appl. Start Time:</b>	7:13 AM	12:00 PM
<b>Appl. Stop Time:</b>	7:19 AM	12:06 PM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	PRE	POST
<b>Application Placement:</b>	BROSOI	BROSOI
<b>Applied By:</b>	DC	DC
<b>Air Temperature, Unit:</b>	57 F	86 F
<b>% Relative Humidity:</b>	70	50
<b>Wind Velocity, Unit:</b>	5 MPH	1 MPH
<b>Wind Direction:</b>	S	N
<b>Dew Presence (Y/N):</b>	Y yes	N no
<b>Soil Temperature, Unit:</b>	58 F	83 F
<b>Soil Moisture:</b>	NORM	NORM
<b>% Cloud Cover:</b>	20	10

### Crop Stage At Each Application

	A	B
<b>Crop 1 Code, BBCH Scale:</b>	GOSHI BCOT	GOSHI BCOT
<b>Stage Scale Used:</b>	PRE	3 LF

### Pest Stage At Each Application

	A	B
<b>Pest 1 Code, Type, Scale:</b>	AMAPA W	AMAPA W
<b>Pest 2 Code, Type, Scale:</b>	IPOLA W	IPOLA W

# University of Tennessee

## New Herbicide Mixtures in Xtend Cotton

Trial ID: SYNXTEND17  
 Protocol ID: SYNXTEND17  
 Project ID:

Location: JACKSON TN Trial Year: 2017  
 Investigator: Dr. Larry Steckel  
 Study Director: LARRY STECKEL  
 Sponsor Contact: JAMES HOLLOWAY

### Application Equipment

	A	B
<b>Appl. Equipment:</b>	BACKPACK	BACKPACK
<b>Equipment Type:</b>	BACCAI	BACCAI
<b>Operation Pressure, Unit:</b>	30 PSI	28 PSI
<b>Nozzle Type:</b>	TTI	TTI
<b>Nozzle Size:</b>	003	003
<b>Nozzle Spacing, Unit:</b>	19 IN	19 IN
<b>Nozzles/Row:</b>	2	2
<b>Boom Length, Unit:</b>	6.33 FT	6.33 FT
<b>Boom Height, Unit:</b>	18 IN	18 IN
<b>Ground Speed, Unit:</b>	4 MPH	4 MPH
<b>Carrier:</b>	WATER	WATER
<b>Spray Volume, Unit:</b>	15 GAL/AC	15 GAL/AC
<b>Mix Size, Unit:</b>	0.528 gallons	0.528 gallons
<b>Propellant:</b>	CO2	CO2
<b>Tank Mix (Y/N):</b>	N no	N no