

University of Georgia

Moringglory response to directed cotton herbicide applications.

Trial ID: C31-03
Location: Moultrie

Study Director:
Investigator: Stanley Culpepper

General Trial Information

Study Director: Stanley Culpepper **Title:** Ext. weed science
Affiliation: University of Georgia
Postal Code: 31794
Investigator: Stanley Culpepper **Title:** Ext. Weed Science
Affiliation: University of Georgia
Postal Code: 31794

Trial Location

City: Moultrie **Trial Status:** completed
State/Prov.: Ga **Trial Reliability:** excellent
Postal Code: good **Initiation Date:** May-09-03
Country: U.S.A.
Directions:

Objectives:

Conclusions:

Crop Description

Crop 1: GOSHI *Gossypium hirsutum* Cotton, American upland
Variety: FM 989 B/RR
BBCH Scale: BCOT **Planting Date:** May-09-03
Planting Method: conventional **Rate, Unit:** 3 seed/ft
Depth, Unit: 0.5 in
Row Spacing, Unit: 36 inch
Seed Bed: bed **Soil Temperature, Unit:** 85 F
Soil Moisture: moist **Emergence Date:** May-14-03

Pest Description

Pest 1 Type: W **Code:** IPOLA *Ipomoea lacunosa*
Common Name: Morningglory, pitted
Description: Description

Pest 2 Type: W **Code:** DIGSA *Digitaria sanguinalis*
Common Name: Digitaria sanguinalis
Description: Description

Pest 3 Type: W **Code:** CYPES *Cyperus esculentus*
Common Name: Edible cyperus
Description: Description

Pest 4 Type: W **Code:** PORPI *Portulaca pilosa*
Common Name: Purslane, pink
Description: Description

Site and Design

Plot Width, Unit: 12 FT **Site Type:** Sunbelt Expo
Plot Length, Unit: 20 FT **Tillage Type:** conventional
Replications: 4 **Study Design:** Randomized Complete Block

Trial Initiation Comments:

Field Prep./Maintenance:

Soil Description

% Sand: 88 **% OM:** 1.2 **Texture:** .
% Silt: 12 **pH:** 6 **Soil Name:** .

% Clay: 0

Fert. Level: .

University of Georgia

Moisture Conditions

Overall Moisture Conditions: wet

Application Description

	A
Application Date:	Jun-19-03
Time of Day:	9:00 am
Application Method:	Broadcast
Application Timing:	LPD
Application Placement:	directed
Applied By:	Culpepper
Air Temperature, Unit:	79 F
% Relative Humidity:	71
Wind Velocity, Unit:	4 mph
Dew Presence (Y/N):	y
Soil Temperature, Unit:	75 F
Soil Moisture:	wet
% Cloud Cover:	40

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale:	GOSHI BCOT
Stage Scale Used:	DESC
Stage Majority, Percent:	V9-V11 100
Stage Minimum, Percent:	. 0
Stage Maximum, Percent:	. 0
Diameter, Unit:	0. .
Height, Unit:	15 in
Height Minimum, Maximum:	13 17

University of Georgia

Pest Stage At Each Application

	A	
Pest 1 Code, Disc., Scale:	IPOLA	W DESC
Stage Majority, Percent:	6-9 in	70
Stage Minimum, Percent:	3 in	15
Stage Maximum, Percent:	12 in	15
Diameter, Unit:	0.	.
Height, Unit:	0.	.
Height Minimum, Maximum:	0.	0.
Density, Unit:	7	ydsq
Coverage, Unit:	100	%
Pest 2 Code, Disc., Scale:	DIGSA	W DESC
Stage Majority, Percent:	7-10	70
Stage Minimum, Percent:	6	10
Stage Maximum, Percent:	12	20
Diameter, Unit:	0.	.
Height, Unit:	0.	.
Height Minimum, Maximum:	0.	0.
Density, Unit:	8	ydsq
Coverage, Unit:	.	.
Pest 3 Code, Disc., Scale:	CYPES	W DESC
Stage Majority, Percent:	6-8 bl	100
Stage Minimum, Percent:	.	0
Stage Maximum, Percent:	.	0
Diameter, Unit:	0.	.
Height, Unit:	10	in
Height Minimum, Maximum:	7	14
Density, Unit:	4	ydsq
Coverage, Unit:	.	.
Pest 4 Code, Disc., Scale:	PORPI	W DESC
Stage Majority, Percent:	3-4 in	100
Stage Minimum, Percent:	.	0
Stage Maximum, Percent:	.	0
Diameter, Unit:	0.	.
Height, Unit:	0.	.
Height Minimum, Maximum:	0.	0.
Density, Unit:	2	ydsq
Coverage, Unit:	.	.

Application Equipment

	A
Appl. Equipment:	backpack
Operating Pressure:	18
Pressure Unit:	psi
Nozzle Type:	flat fan
Nozzle Size:	11002
Nozzle Spacing, Unit:	12 inch
Nozzles/Row:	3
Boom Length, Unit:	4.5 feet
Boom Height, Unit:	15 inch
Ground Speed, Unit:	3 mph
Carrier:	water
Spray Volume:	14.8
Volume Unit:	GAL/AC
Propellant:	CO2
Tank Mix (Y/N):	Y

University of Georgia

Pest Type			W Weed						
Pest Code			CYPES	CYPES	PORPI	PORPI	IPOLA	IPOLA	
Crop Code		GOSHI	GOSHI						
BBCH Scale		BCOT	BCOT						
Rating Date		Jun-26-03	Jul-04-03	Jun-26-03	Jul-04-03	Jun-26-03	Jul-04-03	Jun-26-03	Jul-04-03
Rating Data Type		injury	injury	injury	control	injury	control	injury	control
Rating Unit		percent	percent	percent	percent	percent	percent	percent	percent
Days After Last Applic.		7	15	7	15	7	15	7	15
Trt-Eval Interval		48 DA-A	15 DA-A	7 DA-A	15 DA-A	7 DA-A	15 DA-A	7 DA-A	56 DA-A
ARM Action Codes									
Number of Decimals									
Trt Treatment	Rate								
No. Name	Unit	1	2	3	4	5	6	7	8
20 Caparol	1 qt/a	8.8	3.0	73.0	79.8	99.0	98.0	93.5	91.3
MSMA	43 oz/a								
LSD (P=.05)		4.61	4.11	14.41	9.44	13.46	7.07	8.60	12.26
Standard Deviation		3.26	2.90	10.19	6.68	9.52	5.00	6.08	8.67
CV		37.67	55.71	14.9	8.29	10.69	5.52	7.15	10.15
Bartlett's X2		8.174	19.334	42.662	30.749	29.483	14.352	35.198	31.084
P(Bartlett's X2)		0.963	0.31	0.001*	0.021*	0.001*	0.11	0.002*	0.013*

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

University of Georgia

Pest Type			IPOLA	DIGSA	DIGSA	DIGSA	GOSHI BCOT	GOSHI BCOT	
Pest Code									
Crop Code									
BBCH Scale									
Rating Date			Sep-06-03	Jun-26-03	Jul-04-03	Sep-06-03	Sep-24-03	Sep-24-03	
Rating Data Type			control	injury	control	control	seed/yl	seed yld	
Rating Unit			percent	percent	percent	percent	lb/plot	lb/A	
Days After Last Applic.			79	7	15	79	97	97	
Trt-Eval Interval			56 DA-A	7 DA-A	15 DA-A	56 DA-A	97 DA-A	97 DA-A	
ARM Action Codes								TY2	
Number of Decimals								1	
Trt No.	Treatment Name	Rate	Unit	9	10	11	12	13	14
1	Harvade	8	oz/a	59.8	62.5	64.3	52.8	4.1	2958.5
	Caparol	16	oz/a						
	COC	1	pt/a						
2	Harvade	8	oz/a	85.8	99.0	99.0	96.8	4.3	3103.7
	Roundup WeatherMax	15	oz/a						
	COC	1	pt/a						
3	Harvade	8	oz/a	65.0	61.3	53.3	60.0	4.0	2867.7
	MSMA	43	oz/a						
	COC	1	pt/a						
4	Harvade	8	oz/a	62.5	61.3	50.0	66.8	3.8	2777.0
	Direx	16	oz/a						
	COC	1	pt/a						
5	Roundup WeatherMax	21.3	oz/a	73.8	99.0	99.0	91.8	4.1	2976.6
6	Roundup WeatherMax	21.3	oz/a	92.5	99.0	99.0	99.0	4.2	3067.4
	Direx	1.25	pt/a						
7	Roundup WeatherMax	21.3	oz/a	87.3	99.0	99.0	98.3	4.3	3140.0
	Harvade	8	oz/a						
	COC	1	pt/a						
8	Roundup WeatherMax	21.3	oz/a	83.5	99.0	99.0	98.5	4.3	3103.7
	Staple	0.6	oz/a						
9	Roundup WeatherMax	21.3	oz/a	93.8	99.0	93.8	97.5	4.3	3103.7
	MSMA	43	oz/a						
10	Roundup WeatherMax	21.3	oz/a	91.3	99.0	98.3	95.8	4.4	3194.4
	Valor	1	oz/a						
11	Roundup WeatherMax	21.3	oz/a	91.8	99.0	98.3	97.3	4.3	3103.7
	Aim	1	oz/a						
12	non-treated			0.0	0.0	0.0	0.0	3.7	2686.2
13	Roundup WeatherMax	21.3	oz/a	89.8	99.0	97.8	99.0	4.4	3212.6
	ET751	0.5	oz/a						
14	Roundup WeatherMax	21.3	oz/a	86.0	99.0	96.8	96.3	4.2	3049.2
	ET751	1	oz/a						
15	Roundup WeatherMax	21.3	oz/a	84.0	99.0	96.5	98.5	4.4	3194.4
	Goal	8	oz/a						
16	Roundup WeatherMax	21.3	oz/a	89.3	99.0	99.0	99.0	4.3	3121.8
	Cobra	8	oz/a						
17	Direx	1	qt/a	84.0	90.5	92.5	79.8	4.3	3121.8
	MSMA	43	oz/a						
18	Direx	1	qt/a	84.0	96.5	99.0	97.3	4.3	3121.8
	MSMA	43	oz/a						
	Cobra	8	oz/a						
19	Direx	1	qt/a	89.5	96.0	92.8	97.5	4.3	3140.0
	MSMA	43	oz/a						
	Aim	1	oz/a						
20	Caparol	1	qt/a	81.0	89.0	90.8	82.0	4.1	2958.5
	MSMA	43	oz/a						
LSD (P=.05)			10.47	1.63	6.81	8.01	0.38	273.47	
Standard Deviation			7.40	1.16	4.81	5.67	0.27	193.37	
CV			9.41	1.32	5.61	6.65	6.34	6.34	
Bartlett's X2			24.535	7.77	21.246	39.926	16.106	16.107	
P(Bartlett's X2)			0.138	0.255	0.031*	0.001*	0.65	0.65	

University of Georgia

Pest Type						
Pest Code	IPOLA	DIGSA	DIGSA	DIGSA		
Crop Code					GOSHI	GOSHI
BBCH Scale					BCOT	BCOT
Rating Date	Sep-06-03	Jun-26-03	Jul-04-03	Sep-06-03	Sep-24-03	Sep-24-03
Rating Data Type	control	injury	control	control	seed/yl	seed yld
Rating Unit	percent	percent	percent	percent	lb/plot	lb/A
Days After Last Applic.	79	7	15	79	97	97
Trt-Eval Interval	56 DA-A	7 DA-A	15 DA-A	56 DA-A	97 DA-A	97 DA-A
ARM Action Codes						TY2
Number of Decimals						1

Means followed by same letter do not significantly differ (P=.05, Duncan's New MRT)

Column 14: TY2 = 726.0*[13]

Trial Comments

GENERAL COMMENTS: Roundup applied overtop of 4-leaf cotton. Treatments applied 3 to 4 inches up a 13 to 17 inch cotton plant with barky stem.

OBJECTIVE: Determine most effective layby herbicide for morningglory and grass control.

RESULTS:

Visual Injury:

1. Most herbicide treatments caused 8 to 14% stem necrosis at 7 d after application. However, Harvade treatments caused leaf chlorosis throughout the plant as noted before.
2. Injury from treatments except those containing Harvade recovered quickly. Chlorosis noted in plots treated with Harvade lasted 3 weeks.

Weed Control.

Yellow nutsedge (late-season rating was not taken as weed naturally matured):

1. At 7 d after treatment greater than 90% control was noted with Roundup + Direx or Valor and with MSMA plus Direx, Direx + Cobra, Direx + Aim.
2. At 15 d after treatment greater than 90% control was noted with Roundup + Direx, Valor, Aim, Goal, Cobra or ET 751 and with MSMA plus Direx, Direx + Cobra, or Direx + Aim.
3. At 15 d after treatment mixing only Direx, MSMA, Valor or Goal with Roundup was more effective than Roundup alone.

Pink purslane (late-season rating was not taken as weed naturally matured):

1. At 7 d after treatment, the least effective treatments were Harvade + MSMA, Roundup + Harvade, and Roundup + MSMA.
2. By 15 d after treatment, control by all treatments was greater than 90% except with Harvade + MSMA.
3. At 15 d after treatment, control by Roundup + MSMA was significantly less effective than by Roundup alone.

Pitted morningglory:

1. At 7 d after treatment, mixing Harvade, Valor, Aim, ET751 at 1 oz, Goal, or Cobra with Roundup improved control by 51 to 56% compared to Roundup alone (44% control). Mixing ET 751 at 0.5 oz with Roundup was less effective than the aforementioned mixtures.
2. At 7 d after treatment. MSMA plus Direx, Direx + Cobra, Direx + Aim, or Caparol provided excellent control.
3. At 15 d after treatment, unacceptable control was noted with Harvade + Caparol, Harvade plus MSMA, Roundup alone, and Harvade plus Direx.
4. At 79 d after treatment, control followed similar trends noted at 15 DAT.

Large crabgrass:

1. Roundup provided exceptional speed in control providing nearly complete control by 7 d after treatment.
2. At 7, 15 and 79 d after treatment, Direx or Caparol + MSMA were less effective than glyphosate alone or in mixtures. Harvade mixed with Caparol, MSMA, or Direx were the least effective mixtures.
3. No tank mixture with glyphosate reduced grass control compared to glyphosate applied alone.

SEED COTTON YIELD:

1. Few differences in yield were noted as early season weed control was similar by all treatments.
2. Yield tended to follow trends in grass control and all plots treated with glyphosate combinations provided similar yields.