Field Evaluation of Herbicides on Vegetables, Small Fruit, and Ornamental Crops

2003

Ronald E. Talbert Brian V. Ottis Mayank S. Malik Andrew T. Ellis

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FIELD EVALUATION OF HERBICIDES ON VEGETABLES, SMALL FRUIT, AND ORNAMENTAL CROPS
- 2003 -

Ronald E. Talbert
University Professor
Crop, Soil, and Environmental Sciences Department
University of Arkansas, Fayetteville, AR 72704

Brian V. Ottis, Editor
Research Specialist
Crop, Soil, and Environmental Sciences Department
University of Arkansas, Fayetteville, AR 72704

Mayank S. Malik
Graduate Research Assistant
Crop, Soil, and Environmental Sciences Department
University of Arkansas, Fayetteville, AR 72704

Andrew T. Ellis
Graduate Research Assistant
Crop, Soil, and Environmental Sciences Department
University of Arkansas, Fayetteville, AR 72704

Arkansas Agricultural Experiment Station
Fayetteville, Arkansas 72701

CONTENTS

SUMMARY

Herbicide evaluation studies on vegetables, small fruit, and ornamental crops were conducted in 2003 at the Arkansas Agricultural Experiment Station in Fayetteville, Ark., and the Vegetable Substation near Kibler, Ark., in an effort to evaluate new herbicides, herbicide mixtures, and their application timings for weed control efficacy and crop tolerance. Results of these studies, in part, provide useful information to producers, fellow researchers, the Crop Protection Industry, and the IR-4 Minor Crop Pest Management Program in the development of potential new herbicide uses in vegetable, fruit, and ornamental production.

INTRODUCTION

The Field Evaluation of Herbicides on Vegetables, Small Fruit, and Ornamental Crops, 2003, contains results from herbicide research studies conducted on several minor crops. These studies were funded in part by the IR-4 project, Allen Canning Co., and Gowan Chemical Co. This publication is available online at http://www.uark.edu/depts/agripub/Publications/researchseries/.

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CONTRIBUTORS

N. R. Burgos, Associate Professor
Crop, Soil, and Environmental Sciences Department, Fayetteville

M. L. Lovelace, Former Graduate Research Assistant
Crop, Soil, and Environmental Sciences Department, Fayetteville

E. F. Scherder, Former Research Specialist
Crop, Soil, and Environmental Sciences Department, Fayetteville

E. Stiers, Graduate Research Assistant
Crop, Soil, and Environmental Sciences Department, Fayetteville

Halosulfuron Evaluation on Snap Beans *(Phaseolus vulgaris)*

M.S. Malik, R.E. Talbert, and B.V. Ottis

The experiment was conducted to evaluate phytotoxicity as a result of both preemergence (PRE) and postemergence (POST) applications of halosulfuron and to assess carryover effects of halosulfuron on rotational planting of snap beans and southern peas. Halosulfuron was applied at 0.024, 0.036, and 0.048 lb ai/A PRE and POST. All treatments provided adequate control of yellow nutsedge, large crabgrass, Venice mallow, and carpetweed. Poor control of fall panicum and cutleaf ground cherry with halosulfuron POST at 0.024, 0.036, and 0.048 lb/A was observed. There was slight stunting from the POST treatments to snap beans replanted 40 days after POST application of halosulfuron. Halosulfuron carryover did not injure southern pea.

Site Description

Halosufuron on snap beans

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace
Location: Fayetteville Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert,Malik,Ottis,Scherder,Lovelace **Postal Code:** 72704
Affiliation: University of Arkansas **Investigator:** Weed Science

TRIAL LOCATION

City: Fayetteville **Trial Status:** Completed
State/Prov.: Ark.
Postal Code: 72704
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	ACCOS	COPPERLEAF, HOPHORNBEAM	*ACALYPHA OSTRYAEFOLIA*
2.	CYPES	NUTSEDGE, YELLOW	*CYPERUS ESCULENTUS*
3.	ELEIN	GOOSEGRASS	*ELEUSINE INDICA* (L.) GAERTN.
4.	HIBTR	MALLOW, VENICE	*HIBISCUS TRIONUM*
5.	MOLVE	CARPETWEED	*MOLLUGO VERTICILLATA*
6.	PANDI	FALL PANICUM	*PANICUM DICHOTOMIFLORUM* (L.) MICHX
7.	PHYAN	GROUNDCHERRY, CUTLEAF	*PHYSALIS ANGULATA*
8.	POROL	PURSLANE, COMMON	*PORTULACA OLERACEA*
9.	SOLPT	NIGHTSHADE, EASTERN BLACK	*SOLANUM PTYCANTHUM* DUNAL.

Crop 1: PHSVN BEAN, SNAP **Variety:** Roma 2
Planting Date: May-05-03 **Planting Method:** Drill
Depth: 1 in
Row Spacing: 40 in
Soil Moisture: Adequate

Crop 2: PHSVN BEAN, SNAP **Variety:** Roma 2
Planting Date: Jul-24-03 **Planting Method:** Hand
Depth: 1 in
Soil Moisture: Adequate

Crop 3: VIGSC COWPEA **Variety:** '95-105'
Planting Date: Jul-24-03 **Planting Method:** Han
Depth: 1 in
Soil Moisture: Adequate

SITE AND DESIGN

Plot Width, Unit: 6.67 FT **Plot Length, Unit:** 12 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand: 15	**% OM:** 1.5	**Texture:** Silt Loam
% Silt: 70	**pH:** 6.5	**Soil Name:** Captina
% Clay: 15	**CEC:** 80	**Fert. Level:** Good

APPLICATION DESCRIPTION

	A	B
Application Date:	May-05-03	Jun-15-03
Time of Day:	7.15 PM	4.30 PM
Application Method:	Backpack	Backpack
Application Timing:	PRE	POST(3lf)
Air Temp., Unit:	80 F	74 F
% Relative Humidity:	95	75
Wind Velocity, Unit:	0.5 MPH	1.3 MPH
Dew Presence (Y/N):	N	N
Soil Temp., Unit:	70 F	74 F
Soil Moisture:	Adequate	Adequate
% Cloud Cover:	20	100

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	PHSVN PRE	PHSVN 2-3 trfol
Crop 2 Code, Stage:	PHSVN	PHSVN
Crop 3 Code, Stage:	VIGSC	VIGSC

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:	ACCOS	ACCOS
Stage Scale:	PRE	2 leaf
Weed 2 Code, Stage:	CYPES	CYPES
Stage Scale:	PRE	2 leaf
Weed 3 Code, Stage:	ELEIN	ELEIN
Stage Scale:	PRE	2 leaf
Weed 4 Code, Stage:	HIBTR	HIBTR
Stage Scale:	PRE	2 leaf
Weed 5 Code, Stage:	MOLVE	MOLVE
Stage Scale:	PRE	2 leaf
Weed 6 Code, Stage:	PANDI	PANDI
Stage Scale:	PRE	2 leaf
Weed 7 Code, Stage:	PHYAN	PHYAN
Stage Scale:	PRE	2 leaf
Weed 8 Code, Stage:	POROL	POROL
Stage Scale:	PRE	2 leaf
Weed 9 Code, Stage:	SOLPT	SOLPT
Stage Scale:	PRE	2 leaf

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 BKPK	CO2 BKPK
Operating Pressure:	30	30
Nozzle Type:	VSFlatfan	VSFlatfan
Nozzle Size:	80015 DG	80015 DG
Nozzle Spacing, Unit:	20 In	20 In
Band Width, Unit:	60 In	60 In
Boom Height, Unit:	18 In	18 In
Ground Speed, Unit:	3 mph	3 mph
Carrier:	Water	Water

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	S. bean Injury 20-Jun	S. bean Injury 27-Jun	ACCOS[a] Control 20-Jun	ACCOS Control 27-Jun	CYPES Control 20-Jun	CYPES Control 27-Jun
					%					
1	Untreated Check				0	0	0	0	0	0
2	Weed-free Check				0	0	99	99	75	85
3	Halosulfuron	0.024	LB A/A	PRE	0	0	98	99	97	99
	(Sandea)			PRE						
4	Halosulfuron	0.036	LB A/A	PRE	0	0	97	99	97	98
5	Halosulfuron	0.048	LB A/A	PRE	0	0	98	99	98	98
6	Halosulfuron	0.024	LB A/A	POST	0	0	98	99	99	99
	NIS	0.25	% V/V	POST						
	(Latron AG-98)									
7	Halosulfuron	0.036	LB A/A	POST	0	0	99	99	98	99
	NIS	0.25	% V/V	POST						
8	Halosulfuron	0.048	LB A/A	POST	0	0	97	99	97	98
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					NS	NS	2	1	20	12

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Weed Code				DIGSA	DIGSA	HIBTR	HIBTR	MOLVE	MOLVE
Crop Code									
Rating Data Type				Control	Control	Control	Control	Control	Control
Rating Date				20-Jun	27-Jun	20-Jun	27-Jun	20-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg					
				%					
1	Untreated Check			0	0	0	0	0	0
2	Weed-free Check			99	99	99	99	99	99
3	Halosulfuron	0.024	LB A/A	PRE	88	98	97	99	89	91
	(Sandea)			PRE						
4	Halosulfuron	0.036	LB A/A	PRE	86	91	98	99	94	97
5	Halosulfuron	0.048	LB A/A	PRE	95	98	98	98	95	97
6	Halosulfuron	0.024	LB A/A	POST	89	95	98	99	95	98
	NIS	0.25	% V/V	POST						
	(Latron AG-98)			POST						
7	Halosulfuron	0.036	LB A/A	POST	86	93	98	98	97	98
	NIS	0.25	% V/V	POST						
8	Halosulfuron	0.048	LB A/A	POST	88	91	97	99	94	96
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					9	5	2	2	5	4

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Weed Code				PANDI	PANDI	PHYHE	PHYHE	POROL
Crop Code								
Rating Data Type				Control	Control	Control	Control	Control
Rating Date				20-Jun	27-Jun	20-Jun	27-Jun	20-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg				
				%				
1	Untreated Check			0	0	0	0	0
2	Weed-free Check			96	98	95	98	98
3	Halosulfuron (Sandea)	0.024	LB A/A	PRE PRE	83	94	71	89	96
4	Halosulfuron	0.036	LB A/A	PRE	91	94	45	58	98
5	Halosulfuron	0.048	LB A/A	PRE	94	97	71	40	98
6	Halosulfuron NIS (Latron AG-98)	0.024 0.25	LB A/A % V/V	POST POST POST	25	48	79	84	99
7	Halosulfuron NIS	0.036 0.25	LB A/A % V/V	POST POST	30	53	91	96	99
8	Halosulfuron NIS	0.048 0.25	LB A/A % V/V	POST POST	43	50	70	93	98
LSD (P=0.05)					31	13	23	6	3

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	POROL	SOLPT	SOLPT	S. bean	S. bean Injury	S. bean Injury
Weed Code					POROL	SOLPT	SOLPT	S. bean	S. bean Injury	S. bean Injury
Crop Code									(Replt)	(Replt)
Rating Data Type					Control	Control	Control	Yield	(Replt)	(Replt)
Rating Date					27-Jun	20-Jun	27-Jun	2-Jul	6-Aug	20-Aug
-----					---------- % ----------			ton/A	---------- % ----------	
1	Untreated Check				0	0	0	2.4	0	0
2	Weed-free Check				99	99	99	2.8	0	0
3	Halosulfuron	0.024	LB A/A	PRE	98	83	91	3.1	0	0
	(Sandea)			PRE						
4	Halosulfuron	0.036	LB A/A	PRE	99	78	86	2.3	0	0
5	Halosulfuron	0.048	LB A/A	PRE	99	88	92	2.7	5	4
6	Halosulfuron	0.024	LB A/A	POST	99	88	93	3.1	6	4
	NIS	0.25	% V/V	POST						
	(Latron AG-98)			POST						
7	Halosulfuron	0.036	LB A/A	POST	98	90	95	2.8	10	9
	NIS	0.25	% V/V	POST						
8	Halosulfuron	0.048	LB A/A	POST	99	85	94	2.5	15	9
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					2	8	6	NS	4	4

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	S. bean Injury (Replt) 14-Sep	S. bean Injury (Replt) 21-Sep	S. bean Injury (Replt) 14-Oct	S. Pea Injury (Replt) 6-Aug	S. Pea Injury (Replt) 20-Aug	S. Pea Injury (Replt) 14-Sep
	Weed Code									
	Crop Code									
	Rating Date									
					%					
1	Untreated Check				0	0	0	0	0	0
2	Weed-free Check				0	0	0	0	0	0
3	Halosulfuron	0.024	LB A/A	PRE	0	0	0	0	0	0
	(Sandea)			PRE						
4	Halosulfuron	0.036	LB A/A	PRE	0	0	0	0	0	0
5	Halosulfuron	0.048	LB A/A	PRE	4	4	3	0	0	0
6	Halosulfuron	0.024	LB A/A	POST	4	3	3	0	0	0
	NIS	0.25	% V/V	POST						
	(Latron AG-98)									
7	Halosulfuron	0.036	LB A/A	POST	6	5	5	0	0	0
	NIS	0.25	% V/V	POST						
8	Halosulfuron	0.048	LB A/A	POST	8	5	4	0	0	0
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					4	2	3	0	0	0

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Halosulfuron on beans

University of Arkansas

Trial ID: FAY03-01 Study Dir.: Talbert,Malik,Ottis

Location: Fayetteville Investigator: Weed Science

Weed Code					S. Pea	S. Pea
Crop Code					Injury	Injury
					(Replt)	(Replt)
Rating Date					21-Sep	14-Oct
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg		
					---------- % ----------	
1	Untreated Check				0	0
2	Weed-free Check				0	0
3	Halosulfuron	0.024	LB A/A	PRE	0	0
	(Sandea)			PRE		
4	Halosulfuron	0.036	LB A/A	PRE	0	0
5	Halosulfuron	0.048	LB A/A	PRE	0	0
6	Halosulfuron	0.024	LB A/A	POST	0	0
	NIS	0.25	% V/V	POST		
	(Latron AG-98)					
7	Halosulfuron	0.036	LB A/A	POST	0	0
	NIS	0.25	% V/V	POST		
8	Halosulfuron	0.048	LB A/A	POST	0	0
	NIS	0.25	% V/V	POST		
LSD (P=0.05)					0	0

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; DIGSA, large crabgrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYHE, clammy groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Herbicide Evaluation in Snap Beans *(Phaseolus vulgaris)*

M.S. Malik, R.E. Talbert, and B.V. Ottis

Herbicide performance trials for snap beans were conducted in 2002 and 2003 in Fayetteville, Ark .. Treatments that provided adequate control of hophornbeam copperleaf, yellow nutsedge, goosegrass, Venice mallow, cutleaf groundcherry, fall panicum, common purslane, and easternblack nightshade were preemergence (PRE) applications of s-metolachlor (Dual Magnum) at 0.6 lb ai/A, fomesafen (Reflex) at 0.25 lb/A, s-metolachlor + halosulfuron (Sandea) at 0.5 + 0.032 lb/A, flufenacet (Define) at 0.3 lb/A, postemergence (POST) applications of fomesafen + bentazon (Basagran) at 0.2 + 0.5 lb/A, imazamox (Raptor) at 0.036 lb/A, imazamox + bentazon at 0.036 + 0.5 lb/A, imazamox + fomesafen + halosulfuron at 0.036 + 0.2 + 0.032 lb/A, halosulfuron + bentazon at 0.032 + 0.5 lb/A, halosulfuron + fomesafen at 0.032 + 0.2 lb/A, chloransulam (FirstRate) at 0.016 lb/A. Dimethenamid-p (Outlook) at 0.5 and 1 lb/A PRE, imazethapyr (Pursuit) at 0.036 lb/A PRE, and acifluorfen (Ultra Blazer) at 0.025 and 0.5 lb/A provided less than adequate control of Venice mallow (30 and 55%, respectively) and yellow nutsedge (0 and 33%, respectively). Fomesafen at 0.25 lb/A and rimsulfuron (Shadeout) + bentazon POST at 0.016 + 0.5 lb/A provided moderate control of yellow nutsedge (70%) and hophornbeam copperleaf (70%).

Excessive injury to snap beans, which resulted in yield loss, was caused by rimsulfuron at 0.016 lb/A PRE and POST (33% and 91%, respectively), dimethenamid-p at 1 lb/A PRE (35%), acifluorfen at 1 lb/A POST (43%), sequential applications of s-metolachlor fb halosulfuron at 0.5 + 0.032 lb/A POST (30%), s-metolachlor fb imazamox at 0.5 + 0.032 lb/A POST (43%), and the tank mixture of rimsulfuron + bentazon at 0.016 + 0.5 lb/A POST (70%). Promising new herbicides uses in snapbeans included: dimethenamid-P (PRE), flufenacet (PRE), imazamox + bentazon (POST), halosulfuron (PRE and POST), and chloransulam.

Site Description

Herbicide evaluation in snapbeans

Trial ID: FAY03-02 Study Dir.: Talbert, Malik, Ottis, Scherder, Lovelace
Location: Fayetteville Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Malik, Ottis, Scherder, Lovelace
Affiliation: University of Arkansas
Investigator: Weed Science

TRIAL LOCATION

City: Fayetteville **Trial Status:** Completed
State/Prov.: Ark.
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	ACCOS	COPPERLEAF, HOPHORNBEAM	*ACALYPHA OSTRYAEFOLIA*
2.	CYPES	NUTSEDGE, YELLOW	*CYPERUS ESCULENTUS*
3.	ELEIN	GOOSEGRASS	*ELEUSINE INDICA* (L.) GAERTN.
4.	HIBTR	MALLOW, VENICE	*HIBISCUS TRIONUM*
5.	MOLVE	CARPETWEED	*MOLLUGO VERTICILLATA*
6.	PANDI	PANICUM, FALL	*PANICUM DICHOTOMIFLORUM* (L.) MICHX.
7.	PHYAN	GROUNDCHERRY, CUTLEAF	*PHYSALIS ANGULATA*
8.	POROL	PURSLANE, COMMON	*PORTULACA OLERACEA*
9.	SOLPT	NIGHTSHADE, EASTERN BLACK	*SOLANUM PTYCANTHUM* DUNAL.

Snap Beans **Variety:** Roma 2
Planting Date: May-05-03 **Planting Method:** Drill
Row Spacing: 40 in
Soil Moisture: Adequate

SITE AND DESIGN

Plot Width, Unit: 6.67 FT **Plot Length, Unit:** 12 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand:	15	**% OM:**	1.5	**Texture:**	Silt Loam
% Silt:	70	**pH:**	6.5	**Soil Name:**	Captina
% Clay:	15	**CEC:**	80	**Fert. Level:**	Good

APPLICATION DESCRIPTION

	A	B
Application Date:	May-05-03	May-28-03
Time of Day:	7.15 PM	12.30 PM
Application Method:	Backpack	Backpack
Application Timing:	PRE	POST
Air Temp., Unit:	80 F	76 F
% Relative Humidity:	80	78
Wind Velocity, Unit:	0.5 mph	2 mph
Dew Presence (Y/N):	N	N
Soil Temp., Unit:	70 F	74 F
Soil Moisture:	Adequate	Adequate
% Cloud Cover:	20	100

CROP STAGE AT EACH APPLICATION

	A	B
	PHSVN	PHSVN
Stage Scale:	PRE	2-3trifol

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:	ACCOS	ACCOS
Stage Scale:	PRE	1-2 leaf
Weed 2 Code, Stage:	CYPES	CYPES
Stage Scale:	PRE	1-2 leaf
Weed 3 Code, Stage:	ELEIN	ELEIN
Stage Scale:	PRE	1-2 leaf
Weed 4 Code, Stage:	HIBTR	HIBTR
Stage Scale:	PRE	1-2 leaf
Weed 5 Code, Stage:	MOLVE	MOLVE
Stage Scale:	PRE	1-2 leaf
Weed 6 Code, Stage:	PANDI	PANDI
Stage Scale:	PRE	1-2 leaf
Weed 7 Code, Stage:	PHYAN	PHYAN
Stage Scale:	PRE	1-2 leaf
Weed 8 Code, Stage:	POROL	POROL
Stage Scale:	PRE	1-2 leaf
Weed 9 Code, Stage:	SOLPT	SOLPT
Stage Scale:	PRE	1-2 leaf

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 BKPK	CO2 BKPK
Operating Pressure:	30 psi	30 psi
Nozzle Type:	VSFlatfan	VSFlatfan
Nozzle Size:	80015 DG	80015 DG
Nozzle Spacing, Unit:	20 In	20 In
Band Width, Unit:	60 In	60 In
Boom Height, Unit:	18 In	18 In
Ground Speed, Unit:	3 mph	3 mph
Carrier:	Water	Water
Spray Volume, Unit:	10	

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					S. bean	S.bean	ACCOS[a]	ACCOS	CYPES	CYPES
Crop Code										
Rating Data Type					Injury	Injury	Control	Control	Control	Control
Rating Date					6-Jun	27-Jun	6-Jun	27-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
1	Check				0	0	0	0	0	0
2	s-Metolachlor (Dual Magnum)	0.6	LB A/A	PRE	15	8	99	99	99	99
3	Dimethenamid-P (Outlook)	0.5	LB A/A	PRE	10	5	99	99	98	98
4	Dimethenamid-P	1	LB A/A	PRE	20	35	99	99	99	99
5	Fomesafen (Reflex)	0.25	LB A/A	PRE	0	0	99	99	86	88
6	Imazethapyr (Pursuit)	0.036	LB A/A	PRE	8	3	99	99	94	93
7	Halosulfuron (Sandea)	0.032	LB A/A	PRE	15	5	99	99	99	99
8	s-Metolachlor	0.5	LB A/A	PRE	0	0	99	99	95	98
	Halosulfuron	0.032	LB A/A	PRE						
9	Flufenacet	0.3	LB A/A	PRE	13	5	96	98	93	96
10	Flufenacet	0.6	LB A/A	PRE	10	3	99	99	90	94
11	Rimsulfuron (Shadeout)	0.016	LB A/A	PRE	28	33	99	98	89	90
12	Rimsulfuron	0.016	LB A/A	POST	90	91	99	99	94	97
	NIS	0.25	% V/V	POST						
13	Fomesafen	0.25	LB A/A	POST	15	5	99	99	78	78
	NIS (Latron AG-98)	0.25	% V/V	POST						
14	Fomesafen	0.2	LB A/A	POST	10	5	98	99	83	89
	Bentazon (Basagran)	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
15	Aciflurofen (Ultra Blazer)	0.25	LB A/A	POST	15	13	96	98	0	0
	NIS	0.25	% V/V	POST						
16	Aciflurofen	0.5	LB A/A	POST	28	23	98	98	25	33
	NIS	0.25	% V/V	POST						
17	Aciflurofen	1	LB A/A	POST	40	43	91	97	86	90
	NIS	0.25	% V/V	POST						

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					S. bean	S. bean	ACCOS[a]	ACCOS	CYPES	CYPES
Crop Code										
Rating Data Type					Injury	Injury	Control	Control	Control	Control
Rating Date					6-Jun	27-Jun	6-Jun	27-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
18	Imazamox	0.036	LB A/A	POST	15	10	99	99	88	91
	(Raptor)									
	NIS	0.25	% V/V	POST						
19	Imazamox	0.036	LB A/A	POST	10	8	99	99	80	85
	Bentazon	0.5	LB A/A	POST						
	(Basagran)									
	NIS	0.25	% V/V	POST						
20	Imazamox	0.036	LB A/A	POST	10	8	99	99	95	97
	Fomesafen	0.2	LB A/A	POST						
	Halosulfuron	0.032	LB A/A	POST						
	NIS	0.25	% V/V	POST						
21	Halosulfuron	0.032	LB A/A	POST	0	0	90	96	99	99
	Bentazon	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
22	Halosulfuron	0.032	LB A/A	POST	0	0	99	99	93	97
	Fomesafen	0.2	LB A/A	POST						
	NIS	0.25	% V/V	POST						
23	Chloransulam	0.016	LB A/A	POST	10	5	96	99	95	97
	(Firstrate)									
	NIS	0.25	% V/V	POST						
24	s-Metolachlor	0.5	LB A/A	PRE	35	30	93	98	94	99
	Halosulfuron	0.032	LB A/A	POST						
	NIS	0.25	% V/V	POST						
25	s-Metolachlor	0.5	LB A/A	PRE	45	43	99	99	99	99
	Imazamox	0.036	LB A/A	POST						
	NIS	0.25	% V/V	POST						
26	s-Metolachlor	0.5	LB A/A	PRE	13	8	99	99	93	96
	Fomesafen	0.2	LB A/A	POST						
	NIS	0.25	% V/V	POST						
27	Rimsulfuron	0.016	LB A/A	POST	75	70	93	77	90	93
	Bentazon	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					8	15	2	12	5	13

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; ELEIN, goosegrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYAN, cutleaf groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					ELEIN	ELEIN	HIBTR	HIBTR	MOLVE	MOLVE
Crop Code										
Rating Data Type					Control	Control	Control	Control	Control	Control
Rating Date					6-Jun	27-Jun	6-Jun	27-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
1	Check				0	0	0	0	0	0
2	s-Metolachlor (Dual Magnum)	0.6	LB A/A	PRE	99	99	99	99	98	98
3	Dimethenamid-P (Outlook)	0.5	LB A/A	PRE	99	99	30	30	97	97
4	Dimethenamid-P	1	LB A/A	PRE	99	99	99	99	99	99
5	Fomesafen (Reflex)	0.25	LB A/A	PRE	95	95	99	99	97	98
6	Imazethapyr (Pursuit)	0.036	LB A/A	PRE	93	91	45	55	97	97
7	Halosulfuron (Sandea)	0.032	LB A/A	PRE	88	88	99	99	98	98
8	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	96	99
	Halosulfuron	0.032	LB A/A	PRE						
9	Flufenacet	0.3	LB A/A	PRE	95	98	91	94	96	98
10	Flufenacet	0.6	LB A/A	PRE	95	99	99	99	99	99
11	Rimsulfuron (Shadeout)	0.016	LB A/A	PRE	99	99	99	99	99	99
12	Rimsulfuron	0.016	LB A/A	POST	99	99	99	99	99	99
	NIS	0.25	% V/V	POST						
13	Fomesafen	0.25	LB A/A	POST	96	97	99	99	99	99
	NIS (Latron AG-98)	0.25	% V/V	POST						
14	Fomesafen	0.2	LB A/A	POST	99	99	99	99	99	99
	Bentazon (Basagran)	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
15	Aciflurofen (Ultra Blazer)	0.25	LB A/A	POST	88	95	98	98	98	98
	NIS	0.25	% V/V	POST						
16	Aciflurofen	0.5	LB A/A	POST	94	98	98	98	98	98
	NIS	0.25	% V/V	POST						
17	Aciflurofen	1	LB A/A	POST	91	97	86	97	86	97
	NIS	0.25	% V/V	POST						

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					ELEIN	ELEIN	HIBTR	HIBTR	MOLVE	MOLVE
Crop Code										
Rating Data Type					Control	Control	Control	Control	Control	Control
Rating Date					6-Jun	27-Jun	6-Jun	27-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
18	Imazamox (Raptor)	0.036	LB A/A	POST	99	99	99	99	99	99
	NIS	0.25	% V/V	POST						
19	Imazamox	0.036	LB A/A	POST	97	99	99	99	99	99
	Bentazon (Basagran)	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
20	Imazamox	0.036	LB A/A	POST	89	99	86	96	99	99
	Fomesafen	0.2	LB A/A	POST						
	Halosulfuron	0.032	LB A/A	POST						
	NIS	0.25	% V/V	POST						
21	Halosulfuron	0.032	LB A/A	POST	86	86	96	99	99	97
	Bentazon	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
22	Halosulfuron	0.032	LB A/A	POST	96	96	99	99	99	98
	Fomesafen	0.2	LB A/A	POST						
	NIS	0.25	% V/V	POST						
23	Chloransulam (Firstrate)	0.016	LB A/A	POST	96	96	96	99	95	98
	NIS	0.25	% V/V	POST						
24	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	99	99
	Halosulfuron	0.032	LB A/A	POST						
	NIS	0.25	% V/V	POST						
25	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	99	99
	Imazamox	0.036	LB A/A	POST						
	NIS	0.25	% V/V	POST						
26	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	99	99
	Fomesafen	0.2	LB A/A	POST						
	NIS	0.25	% V/V	POST						
27	Rimsulfuron	0.016	LB A/A	POST	99	99	90	93	99	99
	Bentazon	0.5	LB A/A	POST						
	NIS	0.25	% V/V	POST						
LSD (P=0.05)					5	5	3	9	2	2

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; ELEIN, goosegrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYAN, cutleaf groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					PANDI	PHYAN	POROL	SOLPT	PANDI
Crop Code									
Rating Data Type					Control	Control	Control	Control	Control
Rating Date					6-Jun	6-Jun	6-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%				
1	Check				0	0	0	0	0
2	s-Metolachlor (Dual Magnum)	0.6	LB A/A	PRE	98	99	93	93	98
3	Dimethenamid-P (Outlook)	0.5	LB A/A	PRE	98	99	98	99	98
4	Dimethenamid-P	1	LB A/A	PRE	99	99	99	99	99
5	Fomesafen (Reflex)	0.25	LB A/A	PRE	97	96	99	96	97
6	Imazethapyr (Pursuit)	0.036	LB A/A	PRE	92	94	94	98	92
7	Halosulfuron (Sandea)	0.032	LB A/A	PRE	89	81	99	81	89
8	s-Metolachlor	0.5	LB A/A	PRE	99	93	93	91	99
	Halosulfuron	0.032	LB A/A	PRE					
9	Flufenacet	0.3	LB A/A	PRE	96	95	96	93	98
10	Flufenacet	0.6	LB A/A	PRE	99	99	99	99	99
11	Rimsulfuron (Shadeout)	0.016	LB A/A	PRE	99	83	99	80	99
12	Rimsulfuron	0.016	LB A/A	POST	99	86	99	78	99
	NIS	0.25	% V/V	POST					
13	Fomesafen	0.25	LB A/A	POST	99	99	99	99	98
	NIS (Latron AG-98)	0.25	% V/V	POST					
14	Fomesafen	0.2	LB A/A	POST	99	99	99	93	99
	Bentazon (Basagran)	0.5	LB A/A	POST					
	NIS	0.25	% V/V	POST					
15	acifluorfen (Ultra Blazer)	0.25	LB A/A	POST	90	93	98	94	95
	NIS	0.25	% V/V	POST					
16	acifluorfen	0.5	LB A/A	POST	94	91	98	94	98
	NIS	0.25	% V/V	POST					
17	Aciflurofen	1	LB A/A	POST	89	91	93	90	97
	NIS	0.25	% V/V	POST					

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					PANDI	PHYAN	POROL	SOLPT	PANDI
Crop Code									
Rating Data Type					Control	Control	Control	Control	Control
Rating Date					6-Jun	6-Jun	6-Jun	6-Jun	27-Jun
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%				
18	Imazamox	0.036	LB A/A	POST	99	99	99	99	99
	(Raptor)								
	NIS	0.25	% V/V	POST					
19	Imazamox	0.036	LB A/A	POST	97	99	99	99	99
	Bentazon	0.5	LB A/A	POST					
	(Basagran)								
	NIS	0.25	% V/V	POST					
20	Imazamox	0.036	LB A/A	POST	99	99	99	99	99
	Fomesafen	0.2	LB A/A	POST					
	Halosulfuron	0.032	LB A/A	POST					
	NIS	0.25	% V/V	POST					
21	Halosulfuron	0.032	LB A/A	POST	80	89	99	88	86
	Bentazon	0.5	LB A/A	POST					
	NIS	0.25	% V/V	POST					
22	Halosulfuron	0.032	LB A/A	POST	93	99	99	93	96
	Fomesafen	0.2	LB A/A	POST					
	NIS	0.25	% V/V	POST					
23	Chloransulam	0.016	LB A/A	POST	90	86	93	91	95
	(Firstrate)			POST					
	NIS	0.25	% V/V	POST					
24	s-Metolachlor	0.5	LB A/A	PRE	99	97	97	91	99
	Halosulfuron	0.032	LB A/A	POST					
	NIS	0.25	% V/V	POST					
25	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	99
	Imazamox	0.036	LB A/A	POST					
	NIS	0.25	% V/V	POST					
26	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	99	99
	Fomesafen	0.2	LB A/A	POST					
	NIS	0.25	% V/V	POST					
27	Rimsulfuron	0.016	LB A/A	POST	99	86	99	86	99
	Bentazon	0.5	LB A/A	POST					
	NIS	0.25	% V/V	POST					
LSD (P=0.05)					5	4	2	4	6

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; ELEIN, goosegrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYAN, cutleaf groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					PHYAN	POROL	SOLPT	S. bean
Crop Code								
Rating Data Type					Control	Control	Control	Yield
Rating Date					27-Jun	27-Jun	27-Jun	7-Jul
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	---------- % ----------			ton/A
1	Check				0	0	0	2.3
2	s-Metolachlor (Dual Magnum)	0.6	LB A/A	PRE	99	97	98	3.5
3	Dimethenamid-P (Outlook)	0.5	LB A/A	PRE	99	98	99	2.9
4	Dimethenamid-P	1	LB A/A	PRE	99	99	99	2.3
5	Fomesafen (Reflex)	0.25	LB A/A	PRE	97	99	97	4
6	Imazethapyr (Pursuit)	0.036	LB A/A	PRE	98	98	96	2.7
7	Halosulfuron (Sandea)	0.032	LB A/A	PRE	81	99	81	3.6
8	s-Metolachlor	0.5	LB A/A	PRE	98	98	98	3.3
	Halosulfuron	0.032	LB A/A	PRE				
9	Flufenacet	0.3	LB A/A	PRE	96	97	97	2.6
10	Flufenacet	0.6	LB A/A	PRE	99	99	99	3.1
11	Rimsulfuron (Shadeout)	0.016	LB A/A	PRE PRE	80	99	80	1.6
12	Rimsulfuron	0.016	LB A/A	POST	84	99	84	0
	NIS	0.25	% V/V	POST				
13	Fomesafen	0.25	LB A/A	POST	99	99	99	2.5
	NIS (Latron AG-98)	0.25	% V/V	POST				
14	Fomesafen	0.2	LB A/A	POST	99	99	98	3.9
	Bentazon (Basagran)	0.5	LB A/A	POST				
	NIS	0.25	% V/V	POST				
15	Aciflurofen (Ultra Blazer)	0.25	LB A/A	POST	98	98	98	1.6
	NIS	0.25	% V/V	POST				
16	Aciflurofen	0.5	LB A/A	POST	98	98	98	1.7
	NIS	0.25	% V/V	POST				
17	Aciflurofen	1	LB A/A	POST	97	97	97	0.5
	NIS	0.25	% V/V	POST				

Herbicide evaluation in snap beans

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Code					PHYAN	POROL	SOLPT	S. bean
Crop Code								
Rating Data Type					Control	Control	Control	Yield
Rating Date					27-Jun	27-Jun	27-Jun	7-Jul
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	---------- % ----------			ton/A
18	Imazamox	0.036	LB A/A	POST	99	99	99	1.7
	(Raptor)							
	NIS	0.25	% V/V	POST				
19	Imazamox	0.036	LB A/A	POST	99	99	99	3.7
	Bentazon	0.5	LB A/A	POST				
	(Basagran)							
	NIS	0.25	% V/V	POST				
20	Imazamox	0.036	LB A/A	POST	99	99	99	2.5
	Fomesafen	0.2	LB A/A	POST				
	Halosulfuron	0.032	LB A/A	POST				
	NIS	0.25	% V/V	POST				
21	Halosulfuron	0.032	LB A/A	POST	89	99	89	3.5
	Bentazon	0.5	LB A/A	POST				
	NIS	0.25	% V/V	POST				
22	Halosulfuron	0.032	LB A/A	POST	99	99	97	3.8
	Fomesafen	0.2	LB A/A	POST				
	NIS	0.25	% V/V	POST				
23	Chloransulam	0.016	LB A/A	POST	97	98	97	1.6
	(Firstrate)							
	NIS	0.25	% V/V	POST				
24	s-Metolachlor	0.5	LB A/A	PRE	99	99	98	3.5
	Halosulfuron	0.032	LB A/A	POST				
	NIS	0.25	% V/V	POST				
25	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	0.5
	Imazamox	0.036	LB A/A	POST				
	NIS	0.25	% V/V	POST				
26	s-Metolachlor	0.5	LB A/A	PRE	99	99	99	3.1
	Fomesafen	0.2	LB A/A	POST				
	NIS	0.25	% V/V	POST				
27	Rimsulfuron	0.016	LB A/A	POST	83	99	89	0.1
	Bentazon	0.5	LB A/A	POST				
	NIS	0.25	% V/V	POST				
LSD (P=0.05)					5	2	6	2

[a] Weed Codes: ACCOS, hophornbeam copperleaf; CYPES, yellow nutsedge; ELEIN, goosegrass; HIBTR, Venice mallow; MOLVE, carpetweed; PANDI, fall panicum; PHYAN, cutleaf groundcherry; POROL, common purslane; SOLPT, eastern black nightshade

Herbicide Evaluation on Southern Pea

E. Stiers, B.V. Ottis, R.E. Talbert

Several new herbicides for potential use in southern pea production were evaluated. Injury with standard treatments of s-metolachlor (Dual Magnum) and imazethapyr (Pursuit) was minimal, but a tank mixture of fomesafen (Reflex) + bentazon (Basagran) resulted in 73% crop injury two weeks after treatment. However, crop injury four weeks after treatment was less than 12% with all treatments. Palmer amaranth (AMAPA) and common purslane (POROL) control with standard treatments of s-metolachlor + DCPA (Dacthal), imazethapyr, or bentazon was greater than 90%. The treatments of imazamox (Raptor) + bentazon POST and sulfentrazone (Spartan) PRE provided excellent control of all weeds, and resulted in minor crop injury. Halosulfuron (Sandea) + bentazon resulted in 20 to 22% crop injury, but provided excellent weed control. Crop yields ranged from 280 to 1039 g/plot, with the standard treatment of imazethapyr + s-metolachlor PRE providing the highest yields. Due to poor Palmer amaranth control with clomazone (Command) PRE, yields were significantly reduced with this treatment. Sulfentrazone (Spartan) appears to be a potentially effective herbicide for southern pea production.

Herbicide Evaluation on Southern pea

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Stiers, Ottis, Talbert

Location: Kibler Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	Phyto 24-Jul	AMAPA[a] 24-Jul	IPOLA 24-Jul	POROL 24-Jul	SIDSP 24-Jul	S. Pea Injury 7-Aug
1	Weed Free				0	100	100	100	100	0
2	Imazethapyr (Pursuit)	0.063	LB A/A	PRE	3	100	65	100	83	0
	s-Metolachlor (Dual Magnum)	1	LB A/A	PRE						
3	s-Metolachlor	0.6	LB A/A	PRE	1	95	73	95	0	0
4	s-Metolachlor	0.6	LB A/A	PRE	0	100	63	90	28	0
	DCPA (Dacthal)	1.5	LB A/A	PRE						
5	s-Metolachlor	0.6	LB A/A	PRE	4	100	63	98	47	0
	DCPA	4	LB A/A	PRE						
6	s-Metolachlor	0.6	LB A/A	PRE	8	100	89	100	100	3
	DCPA	4	LB A/A	PRE						
	Bentazon (Basagran)	1	LB A/A	POST						
7	Clomazone (Command)	0.56	LB A/A	PRE	0	68	58	100	95	0
8	Dimethenamid-P (Outlook)	0.64	LB A/A	PRE	0	98	40	100	88	0
9	Flufenacet (Define)	0.25	LB A/A	PRE	1	98	73	99	53	0
10	Flufenacet	0.5	LB A/A	PRE	0	96	75	100	85	3
11	Halosulfuron (Sandea)	0.032	LB A/A	PRE	4	99	75	100	55	0
12	Halosulfuron	0.048	LB A/A	PRE	0	98	83	100	67	0
13	Sulfentrazone (Spartan)	0.375	LB A/A	PRE	11	100	88	100	93	0
14	Aciflurofen (Ultra Blazer)	0.19	LB A/A	POST	15	96	93	94	40	0
15	Aciflurofen	0.19	LB A/A	POST	30	99	98	100	100	1
	Bentazon	0.75	LB A/A	POST						

Herbicide Evaluation on Southern pea

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Stiers, Ottis, Talbert

Location: Kibler Investigator: Weed Science

				Phyto	AMAPA	IPOLA	POROL	SIDSP	S. Pea Injury
Rating Type									
Rating Date				24-Jul	24-Jul	24-Jul	24-Jul	24-Jul	7-Aug
16	Aciflurofen	0.125 LB A/A	POST	9	95	93	98	100	0
	Bentazon	0.5 LB A/A	POST						
17	Aciflurofen	0.25 LB A/A	POST	41	100	90	97	100	1
	Bentazon	0.5 LB A/A	POST						
18	Halosulfuron	0.032 LB A/A	POST	25	94	93	5	73	4
19	Halosulfuron	0.032 LB A/A	POST	20	90	89	99	100	1
	Bentazon	0.75 LB A/A	POST						
20	Halosulfuron	0.024 LB A/A	POST	22	95	90	100	100	3
	Bentazon	0.75 LB A/A	POST						
21	Imazamox (Raptor)	0.03 LB A/A	POST	1	99	100	99	100	0
	Bentazon	0.75 LB A/A	POST						
22	Fomesafen (Reflex)	0.25 LB A/A	POST	73	100	100	100	100	11
	Bentazon	0.75 LB A/A	POST						
23	Chloransulam (Firstrate)	0.018 LB A/A	POST	4	23	96	0	35	0
	LSD (0.05)			7	6	11	5	10	4

[a] Weed Codes: AMAPA, Palmer amaranth; IPOLA, pitted morningglory; POROL, common purslane; SIDSP, prickly sida

Herbicide Evaluation on Southern pea

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Stiers, Ottis, Talbert

Location: Kibler Investigator: Weed Science

Rating Type					AMAPA	IPOLA	POROL	SIDSP	S. Pea Flowering	Yield g/plot
Rating Date					7-Aug	7-Aug	7-Aug	7-Aug	7-Aug	16-Sep
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg						
1	Weed Free				100	100	100	100	100	797
2	Imazethapyr (Pursuit)	0.063	LB A/A	PRE	99	73	100	100	100	1039
	s-Metolachlor (Dual Magnum)	1	LB A/A	PRE						
3	s-Metolachlor	0.6	LB A/A	PRE	88	73	95	0	98	867
4	s-Metolachlor	0.6	LB A/A	PRE	99	0	77	0	100	549
	DCPA (Dacthal)	1.5	LB A/A	PRE						
5	s-Metolachlor	0.6	LB A/A	PRE	96	38	90	0	85	566
	DCPA	4	LB A/A	PRE						
6	s-Metolachlor	0.6	LB A/A	PRE	99	83	100	100	93	784
	DCPA	4	LB A/A	PRE						
	Bentazon (Basagran)	1	LB A/A	POST						
7	Clomazone (Command)	0.56	LB A/A	PRE	40	28	100	93	94	280
8	Dimethenamid-P (Outlook)	0.64	LB A/A	PRE	96	8	100	65	100	728
9	Flufenacet (Define)	0.25	LB A/A	PRE	75	63	95	100	100	716
10	Flufenacet	0.5	LB A/A	PRE	83	57	75	98	76	667
11	Halosulfuron (Sandea)	0.032	LB A/A	PRE	93	78	100	0	98	652
12	Halosulfuron	0.048	LB A/A	PRE	91	70	98	0	95	674
13	Sulfentrazone (Spartan)	0.375	LB A/A	PRE	100	88	100	93	98	934
14	Aciflurofen (Ultra Blazer)	0.19	LB A/A	POST	90	94	30	8	63	791
15	Aciflurofen	0.19	LB A/A	POST	95	95	100	100	9	760
	Bentazon	0.75	LB A/A	POST						

Herbicide Evaluation on Southern pea

University of Arkansas

Trial ID: FAY03-02 Study Dir.: Stiers, Ottis, Talbert

Location: Kibler Investigator: Weed Science

				AMAPA	IPOLA	POROL	SIDSP	S. Pea Flowering	Yield g/plot
Rating Type									
Rating Date				7-Aug	7-Aug	7-Aug	7-Aug	7-Aug	16-Sep
16	Aciflurofen	0.125 LB A/A	POST	91	95	98	100	51	475
	Bentazon	0.5 LB A/A	POST						
17	Aciflurofen	0.25 LB A/A	POST	98	94	100	98	6	658
	Bentazon	0.5 LB A/A	POST						
18	Halosulfuron	0.032 LB A/A	POST	84	70	0	23	26	688
19	Halosulfuron	0.032 LB A/A	POST	70	85	100	100	8	477
	Bentazon	0.75 LB A/A	POST						
20	Halosulfuron	0.024 LB A/A	POST	58	88	100	100	10	768
	Bentazon	0.75 LB A/A	POST						
21	Imazamox (Raptor)	0.03 LB A/A	POST	90	97	99	100	98	877
	Bentazon	0.75 LB A/A	POST						
22	Fomesafen (Reflex)	0.25 LB A/A	POST	100	100	94	100	8	682
	Bentazon	0.75 LB A/A	POST						
23	Chloransulam (Firstrate)	0.018 LB A/A	POST	18	96	3	45	56	733
	LSD (0.05)			NS	13	16	8	30	119

[a] Weed Codes: AMAPA, Palmer amaranth; IPOLA, pitted morningglory; POROL, common purslane; SIDSP, prickly sida

Herbicide Evaluation in Grapes *(Vitis vinifera)*

M.S. Malik, R.E. Talbert, and B.V. Ottis

Flumioxazin (Valor), sulfentrazone (Authority), simazine (Princep), and clopyralid (Stinger) were applied preemergence (PRE), following a blanket application of glyphosate (Roundup), and sequential postemergence (POST). Initially, no grape injury was observed. However, later in the season there was obvious vine injury from clopyralid at 0.3 lb ai/A. All treatments gave adequate control of large crabgrass, but bermudagrass control was poor from all herbicide applications, ranging from 0 to 53 %. Grapes treated with clopyralid remained green past the end of the growing season and never ripened. There were significant injury symptoms from clopyralid observed on grape leaves in the form of leaf cupping at time of harvest. Flumioxazin and sulfentrazone herbicides continue to show promise for use in grapes.

Site Description

Herbicide evaluation on grapes

Trial ID: Fay03-04 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace
Location: Fayetteville Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert,Malik,Ottis,Scherder,Lovelac
Affiliation: University of Arkansas
Postal Code: 72701
Investigator: Weed Science

TRIAL LOCATION

City: Fayetteville
State/Prov.: Arkansas
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	DIGSA	Large Crabgrass	*Digitaria sangunilas*
2.	CYNDA	Bermudagrass	*Cynodon dactylon*

Crop 1: VITVI Grape

SITE AND DESIGN

Plot Width, Unit: 8 FT **Plot Length, Unit:** 12 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand:	15	**% OM:**	1.5	**Texture:**	Silt Loam
% Silt:	70	**pH:**	6.5	**Soil Name:**	Captina Silt Loam
% Clay:	15	**CEC:**	80	**Fert. Level:**	Good

APPLICATION DESCRIPTION

	A	B
Application Date:	May-15-03	May-22-03
Time of Day:	6.15 pm	11.00 am
Application Method:	Backpack	Backpack
Application Timing:	Burndown	PRE
Air Temp., Unit:	82.5 F	70.6 F
% Relative Humidity:	73	56
Wind Velocity, Unit:	0.7 mph	1.2 mph
Dew Presence (Y/N):	N	N
Water Hardness:	Y	Y
Soil Temp., Unit:	73 F	72 F
Soil Moisture:	Adequate&	Adequate
% Cloud Cover:	90	50

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	VITVI	VITVI

WEED STAGE AT EACH APPLICATION

	A	B
Weed 2 Code, Stage:	DIGSA	DIGSA
Weed 3 Code, Stage:	CYNDA	CYNDA

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	Backpack	Backpack
Operating Pressure:	30	30
Nozzle Type:	8002 E	11003DG
Nozzle Spacing, Unit:	20 in	20 in
Boom Height, Unit:	18 in	18 in
Ground Speed, Unit:	3 mph	3 mph

Herbicide evaluation on grapes

University of Arkansas

Trial ID: Fay03-04 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Weed Code					Grape	Grape	Grape	Grape	Grape	CYNDA[a]	CYNDA	CYNDA
Crop Code					VITVI	VITVI	VITVI	VITVI	VITVI			
Rating Data Type					Injury	Injury	Injury	Injury	Injury	Control	Control	Control
Rating Date					20-Jun	3-Jul	17-Jul	31-Jul	9-Sep	20-Jun	3-Jul	17-Jul
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%							
1	Check				0	0	0	0	0	0	0	0
2	Flumioxazin (Valor)	0.5	LB A/A	PRE	0	0	0	13	10	35	33	24
3	Flumioxazin	1	LB A/A	PRE	0	0	0	8	5	74	71	63
4	Flumioxazin	0.25	LB A/A	PRE	0	0	0	0	0	36	33	25
	Flumioxazin	0.25	LB A/A	POST								
5	Flumioxazin	0.375	LB A/A	PRE	0	0	0	5	8	66	64	63
	Flumioxazin	0.375	LB A/A	POST								
6	Sulfentrazone (Authority)	0.25	LB A/A	PRE	0	0	0	0	0	31	30	15
7	Sulfentrazone	0.375	LB A/A	PRE	0	0	0	0	0	35	30	24
8	Simazine (Princep)	2	LB A/A	PRE	0	0	0	0	0	20	15	11
	Oryzalin (Surflan)	3	LB A/A	PRE								
9	Clopyralid (Stinger)	0.3	LB A/A	POST	0	0	0	33	30	0	15	13
LSD (P=0.05)					NS	NS	NS	12	12	8	6	7

[a] Weed Codes: CYNDA, bermudagrass; DIGSA, large crabgrass

Herbicide evaluation on grapes

University of Arkansas

Trial ID: Fay03-04 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace

Location: Fayetteville Investigator: Weed Science

Weed Code					CYNDA	CYNDA	DIGSA[a]	DIGSA	DIGSA	DIGSA	DIGSA	Grape
Crop Code												VITVI
Rating Data Type					Control	Control	Control	Control	Control	Control	Control	Yield
Rating Date					31-Jul	9-Sep	20-Jun	3-Jul	17-Jul	31-Jul	9-Sep	26-Aug
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%							ton/A
1	Check				0	0	0	0	0	0	0	6.1
2	Flumioxazin (Valor)	0.5	LB A/A	PRE	19	11	94	86	76	65	59	7.7
3	Flumioxazin	1	LB A/A	PRE	56	49	93	91	88	84	80	8.5
4	Flumioxazin	0.25	LB A/A	PRE	23	15	94	93	83	80	78	5.4
	Flumioxazin	0.25	LB A/A	POST								
5	Flumioxazin	0.375	LB A/A	PRE	61	53	93	93	84	83	80	5.9
	Flumioxazin	0.375	LB A/A	POST								
6	Sulfentrazone (Authority)	0.25	LB A/A	PRE	13	8	98	97	93	81	75	6.9
7	Sulfentrazone	0.375	LB A/A	PRE	18	8	99	96	94	93	84	8.9
8	Simazine (Princep)	2	LB A/A	PRE	5	0	96	95	94	91	85	6.8
	Oryzalin (Surflan)	3	LB A/A	PRE								
9	Clopyralid (Stinger)	0.3	LB A/A	POST	6	0	0	97	94	86	78	6.4
LSD (P=0.05)					6	5	3	4	4	5	5	NS

[a] Weed Codes: CYNDA, bermudagrass; DIGSA, large crabgrass

Evaluation of Halosulfuron (Sandea) on Honeydew Melons

M.S. Malik, R.E. Talbert, and B.V. Ottis

An experiment was conducted to evaluate the effect of halosulfuron for both weed control and crop tolerance in honeydew melons. Halosulfuron was applied at 0.076, 0.115, and 0.231 lb ai/A as a postemergence (POST) alone or in sequential POST applications. All applications gave adequate control of tumble pigweed (AMAAL), yellow nutsedge (CYPES), prostrate knotweed (POVAL) and common purslane (POROL). Slight honeydew injury was observed early in the season but honeydews recovered later. The fruit sizes varied across treatments, with no significant differences in fruit size at season end.

Site Description

Sandea on Honeydew melons

Trial ID: Fay03-03 Study Dir.: Talbert,Malik,Ottis,Scherder,Lovelace
Location: Fayetteville,Ark. Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Malik, Ottis, Scherder, Lovelace
Affiliation: University of Arkansas
Postal Code: 72704
Investigator: Weed Science

TRIAL LOCATION

City: Fayetteville **Trial Status:** Completed
State/Prov.: Ark.
Postal Code: 72704
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	AMAAL	PIGWEED, TUMBLE	*AMARANTHUS ALBUS*
2.	CYPES	NUTSEDGE, YELLOW	*CYPERUS ESCULENTUS*
3.	POLAV	KNOTWEED, PROSTRATE	*POLYGONUM AVICULARE*
4.	POROL	PURSLANE, COMMON	*PORTULACA OLERACEA*

Honeydew Melons
Planting Date: May-08-03 **Planting Method:** Hand
Rate: 1 /ft **Depth:** 0.5 in
Row Spacing: 1 ft **Seed Bed:** Raised
Soil Moisture: Adequate **Emergence Date:** May-12-03

SITE AND DESIGN

Plot Width, Unit: 6.67 FT **Plot Length, Unit:** 20 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand:	15	**% OM:**	1.5	**Texture:**	Silt Loam
% Silt:	70	**pH:**	6.5	**Soil Name:**	Captina
% Clay:	15	**CEC:**	80	**Fert. Level:**	Good

APPLICATION DESCRIPTION

	A	B
Application Date:	Jun-06-03	Jun-19-03
Time of Day:	11.30 AM	11.30 AM
Application Method:	Backpack	Backpack
Application Timing:	POST	POST
Air Temp., Unit:	75 F	85 F
% Relative Humidity:	95	95
Wind Velocity, Unit:	1.5 MPH	1.3 MPH
Dew Presence (Y/N):	N	N
Soil Temp., Unit:	70 F	83 F
Soil Moisture:	Adequate	Adequate
% Cloud Cover:	100	20

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 BKPK	CO2 BKPK
Operating Pressure:	30	30
Nozzle Type:	VSFlatfan	VSFlatfan
Nozzle Size:	110015 DG	110015 DG
Nozzle Spacing, Unit:	20 In	20 In
Band Width, Unit:	60 In	60 In
Boom Height, Unit:	18 In	18 In
Ground Speed, Unit:	3 MPH	3 MPH
Carrier:	Water	Water

CROP STAGE AT EACH APPLICATION

A	B
4-5 leaf	10-12 leaf

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:	AMAAL	AMAAL
Stage Scale:	3-4 leaf	8-9 leaf
Weed 2 Code, Stage:	CYPES	CYPES
Stage Scale:	3-4 leaf	8-9 leaf
Weed 3 Code, Stage:	POLAV	POLAV
Stage Scale:	3-4 leaf	8-9 leaf
Weed 4 Code, Stage:	POROL	POROL
Stage Scale:	3-4 leaf	8-9 leaf

Sandea on Honeydew Melons

University of Arkansas

Trial ID: Fay03-03 Study Dir.: Talbert, Malik, Ottis, Scherder, Lovelace

Location: Fayetteville,AR Investigator: Weed Science

Weed Code								AMAAL[a]	AMAAL	AMAAL
Crop Code					Honeydew	Honeydew	Honeydew			
Rating Data Type					Inury	Injury	Injury	Control	Control	Control
Rating Date					20-Jun	27-Jun	17-Jul	20-Jun	27-Jun	17-Jul
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	----------	----------	%	----------	----------	----------
1	Check				0	0	0	0	0	0
2	Halosulfuron (Sandea)	0.076	LB A/A	POST	0	0	0	88	90	90
	NIS	0.5	% V/V	POST						
3	Halosulfuron	0.076	LB A/A	POST	5	3	0	88	90	91
	NIS (Latron AG-98)	0.5	% V/V	POST						
	Halosulfuron	0.076	LB A/A	POST						
	NIS	0.5	% V/V	POST						
4	Halosulfuron	0.115	LB A/A	POST	0	0	0	88	85	90
	NIS	0.5	% V/V	POST						
5	Halosulfuron	0.115	LB A/A	POST	3	3	0	89	91	90
	NIS	0.5	% V/V	POST						
	Halosulfuron	0.115	LB A/A	POST						
	NIS	0.5	% V/V	POST						
6	Halosulfuron	0.231	LB A/A	POST	0	0	0	90	94	88
	NIS	0.5	% V/V	POST						
LSD (P=0.05)					NS	NS	NS	5	7	4

[a] Weed Codes: AMAAL, tumble pigweed; CYPES, yellow nutsedge; POLAV, prostrate knotweed; POROL, common purslane

Sandea on Honeydew Melons

University of Arkansas

Trial ID: Fay03-03 Study Dir.: Talbert, Malik, Ottis, Scherder, Lovelace

Location: Fayetteville,AR Investigator: Weed Science

Weed Code					CYPES	CYPES	CYPES	POLAV	POLAV	POLAV
Crop Code										
Rating Data Type					Control	Control	Control	Control	Control	Control
Rating Date					20-Jun	27-Jun	17-Jul	20-Jun	27-Jun	17-Jul
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
1	Check				0	0	0	0	0	0
2	Halosulfuron (Sandea)	0.076	LB A/A	POST	88	94	95	90	94	95
	NIS	0.5	% V/V	POST						
3	Halosulfuron	0.076	LB A/A	POST	89	94	95	90	94	95
	NIS	0.5	% V/V	POST						
	(Latron AG-98)									
	Halosulfuron	0.076	LB A/A	POST						
	NIS	0.5	% V/V	POST						
4	Halosulfuron	0.115	LB A/A	POST	88	94	95	90	93	95
	NIS	0.5	% V/V	POST						
5	Halosulfuron	0.115	LB A/A	POST	90	95	95	90	95	95
	NIS	0.5	% V/V	POST						
	Halosulfuron	0.115	LB A/A	POST						
	NIS	0.5	% V/V	POST						
6	Halosulfuron	0.231	LB A/A	POST	89	95	95	90	95	95
	NIS	0.5	% V/V	POST						
LSD (P=0.05)					5	3	NS	NS	4	NS

[a] Weed Codes: AMAAL, tumble pigweed; CYPES, yellow nutsedge; POLAV, prostrate knotweed; POROL, common purslane

Sandea on Honeydew Melons

University of Arkansas

Trial ID: Fay03-03 Study Dir.: Talbert, Malik, Ottis, Scherder, Lovelace

Location: Fayetteville,AR Investigator: Weed Science

Weed Code					POROL	POROL	POROL		
Crop Code								Honeydew	Honeydew
Rating Data Type					Control	Control	Control	Fruit Size	Fruit Size
Rating Date					20-Jun	27-Jun	17-Jul	5	6
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	----------% ----------				
1	Check				0	0	0	4	14
2	Halosulfuron (Sandea)	0.076	LB A/A	POST	23	33	78	4	22
	NIS	0.5	% V/V	POST					
3	Halosulfuron	0.076	LB A/A	POST	30	38	78	5	17
	NIS (Latron AG-98)	0.5	% V/V	POST					
	Halosulfuron	0.076	LB A/A	POST					
	NIS	0.5	% V/V	POST					
4	Halosulfuron	0.115	LB A/A	POST	13	39	79	4	17
	NIS	0.5	% V/V	POST					
5	Halosulfuron	0.115	LB A/A	POST	38	48	83	7	17
	NIS	0.5	% V/V	POST					
	Halosulfuron	0.115	LB A/A	POST					
	NIS	0.5	% V/V	POST					
6	Halosulfuron	0.231	LB A/A	POST	48	58	81	6	19
	NIS	0.5	% V/V	POST					
LSD (P=0.05)					16	27	4	NS	NS

[a] Weed Codes: AMAAL, tumble pigweed; CYPES, yellow nutsedge; POLAV, prostrate knotweed; POROL, common purslane

Sandea on Honeydew Melons

University of Arkansas

Trial ID: Fay03-03 Study Dir.: Talbert, Malik, Ottis, Scherder, Lovelace

Location: Fayetteville,AR Investigator: Weed Science

Weed Code									
Crop Code					Honeydew	Honeydew	Honeydew	Honeydew	Honeydew
Rating Data Type					Fruit Size	Fruit Size	Fruit Size	Culls	All Hvsts
Rating Date					8	9	10		
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg					
1	Check				5	3	2	6	33
2	Halosulfuron (Sandea)	0.076	LB A/A	POST	7	3	2	7	47
	NIS	0.5	% V/V	POST					
3	Halosulfuron	0.076	LB A/A	POST	7	4	4	5	43
	NIS (Latron AG-98)	0.5	% V/V	POST					
	Halosulfuron	0.076	LB A/A	POST					
	NIS	0.5	% V/V	POST					
4	Halosulfuron	0.115	LB A/A	POST	7	2	1	8	38
	NIS	0.5	% V/V	POST					
5	Halosulfuron	0.115	LB A/A	POST	6	1	4	4	38
	NIS	0.5	% V/V	POST					
	Halosulfuron	0.115	LB A/A	POST					
	NIS	0.5	% V/V	POST					
6	Halosulfuron	0.231	LB A/A	POST	6	3	3	7	44
	NIS	0.5	% V/V	POST					
LSD (P=0.05)					NS	NS	NS	NS	NS

[a] Weed Codes: AMAAL, tumble pigweed; CYPES, yellow nutsedge; POLAV, prostrate knotweed; POROL, common purslane

Herbicide Evaluation in *Miscanthus* Ornamental Grass (Field study)

M.S. Malik, R.E. Talbert, and B.V. Ottis

A study was established to evaluate *Miscanthus* tolerance to carfentrazone (Aim), 2,4-D + mecoprop + dicamba (Trimec Classic), halosulfuron (Sandea) and oxadiazon + prodiamine (Regalstar G) applications. Treatments were applied at transplanting (PRE), post-transplant (POST) and late post-transplant (LPOST). Herbicide applications with 8x rates of carfentrazone at 0.032 lb ai/A, halosulfuron at 0.18 lb/A, and oxadiazon + prodiamine at 9.6 lb/A caused less than 18% injury to the *Miscanthus*. Single applications of Trimec at 2.7 lb/A cuased 10% or less injury. *Miscanthus* showed a high degree of tolerance to the herbicide products carfentrazone, halosulfuron, oxadiazon + prodiamine and Trimec Classic.

Site Description

Herbicide Phytotoxicity in *Miscanthus*

Trial ID: Fay-03-08 Study Dir.: Talbert, Malik, Ottis, Scherder
Location: Fayetteville Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Malik, Ottis, Scherder
Investigator: Weed Science
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
		Miscanthus	

Ornamental Grass **Variety:** Miscanthus
Planting Date: Jun-14-03 **Planting Method:** Transplanting

SITE AND DESIGN

Plot Width, Unit: 10 FT **Plot Length, Unit:** 40 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand:	15	**% OM:**	1.5	**Texture:**	Silt Loam
% Silt:	70	**pH:**	6.5	**Soil Name:**	Captina
% Clay:	15	**CEC:**	80	**Fert. Level:**	Adequate

APPLICATION DESCRIPTION

	A	B
Application Date:	Jun-16-03	Jul-25-03
Time of Day:	8.00 AM	11.00 AM
Application Method:	BRDCST	
Application Timing:	PRE	POST
Air Temp., Unit:	78 F	91 F
% Relative Humidity:	80	55
Wind Velocity, Unit:	1.3	1.3 mph
Dew Presence (Y/N):	Y	N
Soil Temp., Unit:	69 F	93 F
% Cloud Cover:	2	40

Herbicide Phytotoxicity in *Miscanthus* Ornamental Grass (Field)

University of Arkansas

Trial ID: Fay-03-08 Study Dir.: Talbert, Malik, Ottis, Scherder

Location: Fayetteville Investigator: Weed Science

Crop Code Rating Data Type Rating Date					Orn Grs Injury 3-Jul	Orn Grs Injury 17-Jul	Orn Grs Injury 8-Aug	Orn Grs Injury 22-Aug
					%			
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg				
1	Check				0	0	0	0
2	Carfentrazone (Aim)	0.008	LB A/A	POST	6	8	9	9
	NIS (Latron AG-98)	0.25	% V/V	POST				
	Carfentrazone	0.008	LB A/A	LPOST				
	NIS	0.25	% V/V	LPOST				
3	Carfentrazone	0.016	LB A/A	POST	5	8	10	10
	NIS	0.25	% V/V	POST				
	Carfentrazone	0.016	LB A/A	LPOST				
	NIS	0.25	% V/V	LPOST				
4	Carfentrazone	0.032	LB A/A	POST	6	8	13	15
	NIS	0.25	% V/V	POST				
	Carfentrazone	0.032	LB A/A	LPOST				
	NIS	0.25	% V/V	LPOST				
5	Trimec Classic	0.675	LB A/A	POST	6	6	6	8
6	Trimec Classic	1.35	LB A/A	POST	6	6	9	10
7	Trimec Classic	2.7	LB A/A	POST	3	4	6	9
8	Halosulfuron (Sandea)	0.045	LB A/A	POST	0	0	0	0
	NIS	0.25	% V/V	POST				
9	Halosulfuron	0.09	LB A/A	POST	8	8	10	15
	NIS	0.25	% V/V	POST				
10	Halosulfuron	0.18	LB A/A	POST	8	13	18	18
	NIS	0.25	% V/V	POST				
11	Oxadiazon + Prodiamine	2.4	LB A/A	PRE	0	3	5	5
	Oxadiazon + Prodiamine (Regalstar G)	2.4	LB A/A	4 wk lat				
12	Oxadiazon + Prodiamine	4.8	LB A/A	PRE	8	9	10	10
	Oxadiazon + Prodiamine	4.8	LB A/A	4 wk lat				
13	Oxadiazon + Prodiamine	9.6	LB A/A	PRE	9	10	13	15
	Oxadiazon + Prodiamine	9.6	LB A/A	4 wk lat				
LSD (P=0.05)					3	4	4	5

Herbicide Evaluation in *Miscanthus* (Pot study)

M.S. Malik, R.E. Talbert, and B.V. Ottis

A study was established in 2003 to evaluate phytotoxicity of oxadiazon + prodiamine (Regalstar G) herbicide on *Miscanthus*. The herbicide was applied at 2.4, 4.8 and 9.6 lb/A at transplanting (PRE) and repeated 4 weeks later. The grass was transplanted in the pots and herbicide was spread by hand to each pot on a weight per unit area basis. Injury was observed with sequential applications of oxadiazon + prodiamine at 9.6 lb/A giving a maximum injury of 22 %. There was excellent tolerance to Regalstar G by *Miscanthus*.

Site Description

Herbicide Efficacy in *Miscanthus* (Pot Study)

Trial ID: Fay-03-07 Study Dir.: Talbert, Malik, Ottis, Scherder
Location: Fayetteville Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Malik, Ottis and Scherder
Affiliation: University of Arkansas
Investigator: Weed Science

TRIAL LOCATION

City: Fayetteville **Trial Status:** Completed
State/Prov.: Arkansas
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
		Miscanthus	

Ornamental Grass **Variety:** Miscanthus
Planting Date: Jun-14-03 **Planting Method:** Transplanted

SITE AND DESIGN

Plot Width, Unit: 10 FT **Plot Length, Unit:** 40 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

SOIL DESCRIPTION

% Sand:	15	**% OM:**	1.5	**Texture:**	Silt Loam
% Silt:	70	**pH:**	6.5	**Soil Name:**	Captina
% Clay:	15	**CEC:**	80	**Fert. Level:**	Adequate

APPLICATION DESCRIPTION

	A	B
Application Date:	Jun-16-03	Jul-25-03
Time of Day:	8.00 AM	1.30 PM
Application Method:	BRDCST	BRDCST
Application Timing:	PRE	4 WAT
Applic. Placement:	Directed	Directed
Air Temp., Unit:	78 F	91 F
% Relative Humidity:	80	55
Wind Velocity, Unit:	1.3 mph	1.3 mph
Dew Presence (Y/N):	Y	N
Soil Temp., Unit:	69 F	93 F
Soil Moisture:	Adequate	Adequate
% Cloud Cover:	2	40

Herbicide Injury in Ornamental Grass

University of Arkansas

Trial ID: Fay-03-07 Study Dir.: Talbert, Malik, Ottis, Scherder

Location: Investigator: Weed Science

Crop Code					Orn Grs	Orn. Grs	Orn. Grs	Orn. Grs
Rating Data Type					Injury	Injury	Injury	Injury
Rating Date					3-Jul	17-Jul	8-Aug	22-Aug
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%			
1	Check				0	0	0	0
2	Oxadiazon + Prodiamine	2.4	LB A/A	PRE	3	5	10	13
	Oxadiazon + Prodiamine (Regalstar G)	2.4	LB A/A	4 wk lat				
3	Oxadiazon + Prodiamine	4.8	LB A/A	PRE	4	5	10	13
	Oxadiazon + Prodiamine	4.8	LB A/A	4 wk lat				
4	Oxadiazon + Prodiamine	9.6	LB A/A	PRE	8	8	13	23
	Oxadiazon + Prodiamine	9.6	LB A/A	4 wk lat				
LSD (P=0.05)					4	2	7	10

Herbicide Evaluation in Fall Greens

B.V. Ottis, M.S. Malik, and R.E. Talbert

A study was established in 2003 to evaluate weed control and crop tolerance to several herbicides. Plots consisted of four types of greens, including collards, kale, mustard, and turnips, which were individually drill-seeded in rows. Crop injury and yield for individual crop rows was assessed. Herbicide applications were made preplant incorporated (PPI), preemergence (PRE), and to two-leaf greens (POST). Due to wet conditions and herbicide injury following planting, stand reductions ranged from 13 to 86%. Clomazone (Command) PRE at 0.4 lb ai/A resulted in the highest levels of stand reduction and also produced 18% crop bleaching two months after planting. Clomazone at 0.2 lb/A initially produced 16% bleaching, but was reduced to 5% two months after planting. Sulfentrazone (Authority) at 0.075 and 0.15 lb/A PRE resulted in 46 and 78% stand reduction, but injury to individual rows was minimal, with collards being injured most. A standard application of trifluralin (Treflan) PPI followed by (fb) DCPA produced minimal crop injury and provided adequate weed control. S-metolachlor (Dual Magnum) was applied PRE at 0.5 and 0.75 lb/A. Crop injury was 53% with the high rate, but did not result in significant yield reductions. Dimethenamid-P (Outlook) was also evaluated PRE and POST. Crop injury with dimethenamid-P following PRE applications was significantly greater than injury in s-metolachlor plots, and resulted in reduced yields among collard and mustard greens. S-metolachlor was also applied at 0.48, 0.71, 0.95, and 1.19 lb/A following a PPI trifluralin application of 0.5 lb/A. An interesting finding was that crop injury and weed control did not increase as rate of s-metolachlor increased following trifluralin PPI. Due to the residual activity of s-metolachlor, these results show that s-metolachlor may be a useful residual herbicide with good crop tolerance to apply postemergence in greens. Because of poor crop stands, yield data were somewhat variable and there were few differences. All these herbicides merit further evaluation.

Site Description

Herbicide Evaluation in Fall Greens

Trial ID: KIB 0301 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, Ark. Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Ottis, Malik, Ellis
Investigator: Weed Science

TRIAL LOCATION

City: Kibler
State/Prov.: Ark.

COOPERATOR/LANDOWNER

Cooperator: U of A Vegetable Substation
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	*CHENOPODIUM ALBUM*
2.	POROL	PURSLANE, COMMON	*PORTULACA OLERACEA*
3.	LAMAM	HENBIT	*LAMIUM AMPLEXICAULE*
4.	MATMT	PINEAPPLEWEED	*MATRICARIA MATRICARIOIDES* (LESS.) PORT.

Crop 1: BRSJU MUSTARD (GREEN)
Planting Date: Sep-09-03 **Planting Method:** DRILLED

Crop 2: BRSOA COLLARD
Planting Date: Sep-09-03 **Planting Method:** DRILLED

Crop 3: BRSOA KALE
Planting Date: Sep-09-03 **Planting Method:** DRILLED

Crop 4: BRSRR TURNIP
Planting Date: Sep-09-03 **Planting Method:** DRILLED

SITE AND DESIGN

Plot Width, Unit: 5 FT **Plot Length, Unit:** 10 FT **Reps:** 4
Study Design: RANDOMIZED COMPLETE BLOCK

	Previous Crops	Previous Pesticides	Year
1.	FALLOW		

SOIL DESCRIPTION

% OM:	0.9	**Texture:**	sandy silt loam
pH:	6.3	**Soil Name:**	Roxana

APPLICATION DESCRIPTION

	A	B	C
Application Date:	Sep-09-03	Sep-11-03	Sep-24-03
Time of Day:	10:30 am	8:15 AM	8:00 AM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PPI	PRE	POST
Applic. Placement:	BROSOI	BROSOI	FOLIAR
Air Temp., Unit:	78 F	78 F	75 F
% Relative Humidity:	80	94	92
Wind Velocity, Unit:	4 MPH	5 MPH	3 MPH
Dew Presence (Y/N):	N	N	N
Water Hardness:	N	N	N
Soil Temp., Unit:	80 F	78 F	76 F
Soil Moisture:	ADEQUATE	DRY	ADEQUATE
% Cloud Cover:	0	20	10

CROP STAGE AT EACH APPLICATION

	A	B	C
Crop 1 Code, Stage:	BRSJU	BRSJU	BRSJU
Stage Scale:	PPI	PRE	2LF
Crop 2 Code, Stage:	BRSOA	BRSOA	BRSOA
Stage Scale:	PPI	PRE	2LF
Crop 3 Code, Stage:	BRSOA	BRSOA	BRSOA
Stage Scale:	PPI	PRE	2LF
Crop 4 Code, Stage:	BRSRR	BRSRR	BRSRR
Stage Scale:	PPI	PRE	2LF

WEED STAGE AT EACH APPLICATION

	A	B	C
Weed 1 Code, Stage:	CHEAL	CHEAL	CHEAL
Stage Scale:	PPI	PRE	1-2 LF
Weed 2 Code, Stage:	POROL	POROL	POROL
Stage Scale:	PPI	PRE	1-LF
Weed 3 Code, Stage:	LAMAM	LAMAM	LAMAM
Stage Scale:	PPI	PRE	1-LF
Weed 4 Code, Stage:	MATMT	MATMT	MATMT
Stage Scale:	PPI	PRE	2-LF

APPLICATION EQUIPMENT

	A	B	C
Appl. Equipment:	CO2 BKPK	CO2 BKPK	CO2 BKPK
Operating Pressure:	30 psi	30 psi	30 psi
Nozzle Type:	VSFlatfan	VSFlatfan	VSFlatfan
Nozzle Size:	80015 DG	80015 DG	80015 DG
Nozzle Spacing, Unit:	20 In	20 In	20 In
Band Width, Unit:	60 In	60 In	60 In
Boom Height, Unit:	18 In	18 In	18 In
Ground Speed, Unit:	3 mph	3 mph	3 mph
Carrier:	Water	Water	Water
Spray Volume, Unit:	10	10	10

Herbicide Evaluation in Fall Greens
University of Arkansas

Trial ID: KIB 0301 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, AR Investigator: Weed Science

Weed Code				AVERAGE	AVERAGE	COLLARDS	KALE	MUSTARD	TURNIP
Crop Code				CROP STAND	CROP				
Rating Data Type				REDUCTION	INJURY	INJURY	INJURY	INJURY	INJURY
Rating Unit									
Rating Date				15-Oct	15-Oct	18-Nov	18-Nov	18-Nov	18-Nov
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	----------	----------	%----------	----------	----------
1	Check				13	6	0	0	0	0
2	Trifluralin (Treflan)	0.5	LB A/A	PPI	40	13	13	10	10	13
3	DCPA (Dacthal)	8	LB A/A	PRE	14	5	13	13	8	10
4	Sulfentrazone (Authority)	0.08	LB A/A	PRE	46	18	20	14	8	10
5	Sulfentrazone	0.15	LB A/A	PRE	78	38	23	20	15	13
6	Thiobencarb (Bolero)	1	LB A/A	PRE	38	13	18	15	15	15
7	Thiobencarb	2	LB A/A	PRE	48	13	14	13	10	11
8	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	53	19	18	18	18	18
9	s-Metolachlor	0.75	LB A/A	PRE	75	36	35	35	33	30
10	Dimethenamid-P (Outlook)	0.25	LB A/A	PRE	56	39	45	40	35	35
11	Dimethenamid-P	0.5	LB A/A	PRE	76	45	50	40	40	43
12	Trifluralin	0.5	LB A/A	PPI	53	10	13	5	5	8
	DCPA	4	LB A/A	PRE						
13	Trifluralin	0.5	LB A/A	PPI	71	20	23	21	19	19
	s-Metolachlor	0.48	LB A/A	POST						
14	Trifluralin	0.5	LB A/A	PPI	50	13	18	15	11	10
	s-Metolachlor	0.71	LB A/A	POST						
15	Trifluralin	0.5	LB A/A	PPI	51	19	18	20	18	13
	s-Metolachlor	0.95	LB A/A	POST						
16	Trifluralin	0.5	LB A/A	PPI	75	21	19	19	15	15
	s-Metolachlor	1.19	LB A/A	POST						
17	s-Metolachlor	0.5	LB A/A	POST	36	20	19	18	15	14
18	Dimethenamid-P	0.25	LB A/A	POST	45	15	30	25	20	23
19	Clomazone (Command)	0.2	LB A/A	PRE	70	33	20	23	18	23
20	Clomazone	0.4	LB A/A	PRE	86	45	35	45	45	38
LSD (P=0.05)					37	16	15	16	16	15

Herbicide Evaluation in Fall Greens
University of Arkansas

Trial ID: KIB 0301 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, AR Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	AVG. CROP BLEACH	AVG. CROP BLEACH	CHEAL[a] CONTROL	CHEAL CONTROL	CHEAL CONTROL	POROL CONTROL
Weed Code										
Crop Code										
Rating Data Type										
Rating Unit										
Rating Date					15-Oct	18-Nov	7-Oct	15-Oct	18-Nov	7-Oct
					----------	----------	----------	%----------	----------	----------
1	Check				0	0	0	0	0	0
2	Trifluralin (Treflan)	0.5	LB A/A	PPI	0	0	86	97	98	89
3	DCPA (Dacthal)	8	LB A/A	PRE	0	0	93	100	100	94
4	Sulfentrazone (Authority)	0.08	LB A/A	PRE	0	0	91	100	100	86
5	Sulfentrazone	0.15	LB A/A	PRE	0	0	94	100	100	93
6	Thiobencarb (Bolero)	1	LB A/A	PRE	0	0	35	48	56	59
7	Thiobencarb	2	LB A/A	PRE	0	0	39	46	58	66
8	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	0	0	46	61	81	65
9	s-Metolachlor	0.75	LB A/A	PRE	0	0	79	95	96	90
10	Dimethenamid-P (Outlook)	0.25	LB A/A	PRE	0	0	53	90	92	69
11	Dimethenamid-P	0.5	LB A/A	PRE	0	0	80	99	98	90
12	Trifluralin	0.5	LB A/A	PPI	0	0	91	100	100	95
	DCPA	4	LB A/A	PRE						
13	Trifluralin	0.5	LB A/A	PPI	0	0	75	98	99	88
	s-Metolachlor	0.48	LB A/A	POST						
14	Trifluralin	0.5	LB A/A	PPI	0	0	83	94	93	88
	s-Metolachlor	0.71	LB A/A	POST						
15	Trifluralin	0.5	LB A/A	PPI	0	3	89	99	100	95
	s-Metolachlor	0.95	LB A/A	POST						
16	Trifluralin	0.5	LB A/A	PPI	0	0	86	95	98	93
	s-Metolachlor	1.19	LB A/A	POST						
17	s-Metolachlor	0.5	LB A/A	POST	0	0	43	64	71	68
18	Dimethenamid-P	0.25	LB A/A	POST	0	0	30	25	35	68
19	Clomazone (Command)	0.2	LB A/A	PRE	16	5	95	100	100	93
20	Clomazone	0.4	LB A/A	PRE	18	18	94	100	100	95
LSD (P=0.05)					4	3	22	22	18	23

[a] Weed Codes: CHEAL, common lambsquarters; POROL, common purslane; LAMAM, henbit; MATMT, pineappleweed

Herbicide Evaluation in Fall Greens
University of Arkansas

Trial ID: KIB 0301 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, AR Investigator: Weed Science

Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	POROL	POROL	LAMAM	LAMAM	LAMAM	MATMT
	Weed Code				POROL	POROL	LAMAM	LAMAM	LAMAM	MATMT
	Crop Code									
	Rating Data Type				CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
	Rating Unit									
	Rating Date				15-Oct	18-Nov	7-Oct	15-Oct	18-Nov	15-Oct
					----------%----------					
1	Check				0	0	0	0	0	0
2	Trifluralin (Treflan)	0.5	LB A/A	PPI	95	96	88	96	98	98
3	DCPA (Dacthal)	8	LB A/A	PRE	100	100	88	99	100	99
4	Sulfentrazone (Authority)	0.08	LB A/A	PRE	94	97	76	93	91	98
5	Sulfentrazone	0.15	LB A/A	PRE	100	100	88	93	100	100
6	Thiobencarb (Bolero)	1	LB A/A	PRE	91	90	46	95	94	88
7	Thiobencarb	2	LB A/A	PRE	96	97	65	95	97	95
8	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	73	97	61	73	99	74
9	s-Metolachlor	0.75	LB A/A	PRE	99	99	84	98	99	99
10	Dimethenamid-P (Outlook)	0.25	LB A/A	PRE	94	95	74	98	96	99
11	Dimethenamid-P	0.5	LB A/A	PRE	100	100	88	99	100	99
12	Trifluralin	0.5	LB A/A	PPI	100	100	85	100	100	100
	DCPA	4	LB A/A	PRE						
13	Trifluralin	0.5	LB A/A	PPI	96	98	74	100	99	96
	s-Metolachlor	0.48	LB A/A	POST						
14	Trifluralin	0.5	LB A/A	PPI	77	99	84	100	100	99
	s-Metolachlor	0.71	LB A/A	POST						
15	Trifluralin	0.5	LB A/A	PPI	100	100	86	100	100	100
	s-Metolachlor	0.95	LB A/A	POST						
16	Trifluralin	0.5	LB A/A	PPI	98	99	86	98	99	97
	s-Metolachlor	1.19	LB A/A	POST						
17	s-Metolachlor	0.5	LB A/A	POST	92	94	63	95	95	92
18	Dimethenamid-P	0.25	LB A/A	POST	99	99	59	92	95	97
19	Clomazone (Command)	0.2	LB A/A	PRE	100	100	91	100	100	100
20	Clomazone	0.4	LB A/A	PRE	100	100	94	100	100	100
LSD (P=0.05)					22	6	21	18	5	17

[a] Weed Codes: CHEAL, common lambsquarters; POROL, common purslane; LAMAM, henbit; MATMT, pineappleweed

Herbicide Evaluation in Fall Greens
University of Arkansas

Trial ID: KIB 0301 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, AR Investigator: Weed Science

Weed Code					MATMT	COLLARDS	KALE	MUSTARD	TURNIP
Crop Code									
Rating Data Type					CONTROL	YIELD	YIELD	YIELD	YIELD
Rating Unit									
Rating Date					18-Nov	12-Dec	12-Dec	12-Dec	12-Dec
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	------ % -----	----------ton/A----------			
1	Check				0	49.1	24.7	33.7	34.5
2	Trifluralin (Treflan)	0.5	LB A/A	PPI	99	42.8	46.9	29.8	28.9
3	DCPA (Dacthal)	8	LB A/A	PRE	99	48.9	32.0	34.4	36.2
4	Sulfentrazone (Authority)	0.08	LB A/A	PRE	96	53.6	32.7	77.4	29.3
5	Sulfentrazone	0.15	LB A/A	PRE	99	36.9	36.0	49.1	14.0
6	Thiobencarb (Bolero)	1	LB A/A	PRE	93	56.9	31.1	68.1	21.6
7	Thiobencarb	2	LB A/A	PRE	95	33.1	34.4	19.5	23.2
8	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	94	47.5	38.7	34.4	31.4
9	s-Metolachlor	0.75	LB A/A	PRE	99	36.0	29.4	34.4	43.3
10	Dimethenamid-P (Outlook)	0.25	LB A/A	PRE	98	27.7	31.8	31.3	38.1
11	Dimethenamid-P	0.5	LB A/A	PRE	100	21.8	32.6	13.9	38.9
12	Trifluralin	0.5	LB A/A	PPI	100	42.5	42.6	41.8	29.9
	DCPA	4	LB A/A	PRE					
13	Trifluralin	0.5	LB A/A	PPI	97	39.3	36.8	45.1	21.8
	s-Metolachlor	0.48	LB A/A	POST					
14	Trifluralin	0.5	LB A/A	PPI	100	47.7	39.4	60.4	21.6
	s-Metolachlor	0.71	LB A/A	POST					
15	Trifluralin	0.5	LB A/A	PPI	100	51.0	37.7	46.6	17.8
	s-Metolachlor	0.95	LB A/A	POST					
16	Trifluralin	0.5	LB A/A	PPI	99	48.0	22.9	31.5	44.9
	s-Metolachlor	1.19	LB A/A	POST					
17	s-Metolachlor	0.5	LB A/A	POST	94	42.5	37.6	49.7	40.3
18	Dimethenamid-P	0.25	LB A/A	POST	95	43.0	30.5	54.5	38.2
19	Clomazone (Command)	0.2	LB A/A	PRE	100	62.6	14.2	40.1	29.2
20	Clomazone	0.4	LB A/A	PRE	100	39.4	20.5	28.6	26.9
LSD (P=0.05)					5	19	NS	31	NS

[a] Weed Codes: CHEAL, common lambsquarters; POROL, common purslane; LAMAM, henbit; MATMT, pineappleweed

Herbicide Evaluation in Fall Spinach

B.V. Ottis, M.S. Malik, and R.E. Talbert

A study was established in fall 2003 to evaluate spinach tolerance and herbicide efficacy of several herbicides. Included in the evaluation were currently labeled herbicides, s-metolachlor (Dual Magnum), clopyralid (Stinger), and phenmedipham (Spin-Aid), as well as several others not currently labeled. These included linuron (Lorox), dimethenamid-p (Outlook), thiobencarb (Bolero), flufenacet (Define), trifloxysulfuron (Envoke), flumioxazin (Valor), pyrazon (Pyramin), and pendimethalin (Prowl). Herbicides were applied as single preemergence (PRE), postemergence (POST) or PRE followed by (fb) POST.

Due to heavy rainfall after planting, significant stand reductions occurred with all treatments. However, an application of flumioxazin (0.016 lb ai/A), pyrazon (3.6 lb/A), or pendimathalin (0.5 lb/A) resulted in 91 to 95% stand reduction. Crop injury ranged between 3 and 85%, with pyrazon at 3.6 lb/A PRE resulting in the most injury 1 month after treatment. Weed control varied among herbicide treatments, with >90% control of common lambsquarters (CHEAL) from linuron, metolachlor, dimethenamid-p, flufenacet, flumioxazin, pyrazon, and pendimethalin. Treatments with flumioxazin, pendimethalin, or pyrazon (3.6 lb/A) provided high levels of weed control; however, spinach injury with these treatments reduced yields significantly. New herbicide uses that continued to show promised for weed control in spinach include: linuron, dimethenamid-p, thiobencarb, flufenacet, and flumioxazin at the 0.008 lb/A rate.

Site Description

Evaluation of herbicides for fall spinach

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis
Location: Kibler, Ark. Investigator: Weed Science

GENERAL TRIAL INFORMATION

Study Director: Talbert, Ottis, Malik, Ellis
Affiliation: University of Arkansas
Investigator: Weed Science

TRIAL LOCATION

City: Kibler **Trial Status:** Completed
State/Prov.: Ark.

COOPERATOR/LANDOWNER

Cooperator: U of A Vegetable Substation
Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	*CHENOPODIUM ALBUM*
2.	POROL	PURSLANE, COMMON	*PORTULACA OLERACEA*
3.	LAMAM	HENBIT	*LAMIUM AMPLEXICAULE*
4.	MATMT	PINEAPPLEWEED	*MATRICARIA MATRICARIOIDES* (LESS.) PORT.

Crop 1: SPQOL SPINACH
Planting Date: Sep-09-03 **Planting Method:** DRILLED
Rate: 150 LB/A
Row Spacing: 10 IN **Seed Bed:** FIRM
Soil Moisture: ADEQUATE

SITE AND DESIGN

Plot Width, Unit: 5 FT **Plot Length, Unit:** 10 FT **Reps:** 4
Site Type: FIELD
Tillage Type: CONVENTIONAL **Study Design:** RANDOMIZED COMPLETE BLOCK

	Previous Crops	Previous Pesticides	Year
1.	Fallow		

SOIL DESCRIPTION

% OM:	0.9	**Texture:**	sandy silt loam
pH:	6.3	**Soil Name:**	Roxana
Fert. Level:	Adequate		

APPLICATION DESCRIPTION

	A	B
Application Date:	Sep-09-03	Sep-24-03
Time of Day:	10:30 am	8:15 am
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	POST
Applic. Placement:	BROSOI	FOLIAR
Air Temp., Unit:	80 F	76 F
% Relative Humidity:	80	92
Wind Velocity, Unit:	4 MPH	3 MPH
Dew Presence (Y/N):	N	N
Water Hardness:	N	N
Soil Temp., Unit:	80 F	75 F
Soil Moisture:	ADEQUATE	ADEQUATE
% Cloud Cover:	0	0

CROP STAGE AT EACH APPLICATION

	A	B
Crop 1 Code, Stage:	SPQOL	SPQOL
Stage Scale:	PRE	2-LF

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:	CHEAL	CHEAL
Stage Scale:	PRE	3-LF
Weed 2 Code, Stage:	POROL	POROL
Stage Scale:	PRE	2-LF
Weed 3 Code, Stage:	LAMAM	LAMAM
Stage Scale:	PRE	2-LF
Weed 4 Code, Stage:	MATMT	MATMT
Stage Scale:	PRE	2-LF

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 BKPK	CO2 BKPK
Operating Pressure:	30 psi	30 psi
Nozzle Type:	VSFlatfan	VSFlatfan
Nozzle Size:	80015 DG	80015 DG
Nozzle Spacing, Unit:	20 In	20 In
Band Width, Unit:	60 In	60 In
Boom Height, Unit:	18 In	18 In
Ground Speed, Unit:	3 mph	3 mph
Carrier:	Water	Water
Spray Volume, Unit:	10	10

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code Crop Code Rating Data Type Rating Date					Spinach stand reduc. 7-Oct	Spinach stand reduc. 15-Oct	Spinach stand reduc. 18-Nov	Spinach injury 7-Oct	Spinach injury 15-Oct	Spinach injury 18-Nov
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
1	Check				0	0	0	0	0	0
2	Linuron (Lorox)	0.05	LB A/A	PRE	48	40	38	5	15	10
3	Linuron	0.1	LB A/A	PRE	58	49	59	10	20	16
4	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	58	23	26	10	14	11
5	Dimethenamid-p (Outlook)	0.25	LB A/A	PRE	50	50	63	20	19	21
6	Dimethenamid-p	0.5	LB A/A	PRE	78	79	76	23	29	25
7	Thiobencarb (Bolero)	1	LB A/A	PRE	60	82	75	20	24	23
8	Thiobencarb	2	LB A/A	PRE	28	4	4	3	6	5
9	Flufenacet (Define)	0.15	LB A/A	PRE	53	46	43	8	20	13
10	Flufenacet	0.3	LB A/A	PRE	73	64	59	13	24	18
11	Trifloxysulfuron (Envoke)	0.00125	LB A/A	PRE	64	44	39	13	25	15
12	s-Metolachlor Linuron	0.5 0.05	LB A/A LB A/A	PRE PRE	66	46	44	13	21	8
13	Flumioxazin (Valor)	0.008	LB A/A	PRE	83	78	79	18	21	15
14	Flumioxazin	0.016	LB A/A	PRE	94	97	96	35	35	40
15	s-Metolachlor Clopyralid (Stinger)	0.5 0.08	LB A/A LB A/A	PRE POST	54	54	53	8	20	18
16	s-Metolachlor Phenmedipham (Spin-Aid)	0.5 0.4	LB A/A LB A/A	PRE POST	93	90	94	23	51	43

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code											
Crop Code					Spinach	Spinach	Spinach	Spinach	Spinach	Spinach
Rating Data Type					stand reduc.	stand reduc.	stand reduc.	injury	injury	injury
Rating Date					7-Oct	15-Oct	18-Nov	7-Oct	15-Oct	18-Nov
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
17	Pyrazon (Pyramin)	1.8	LB A/A	PRE	74	85	65	25	45	38
18	Pyrazon	3.6	LB A/A	PRE	95	92	96	85	56	40
19	Pendimethalin (Prowl)	0.5	LB A/A	PRE	91	92	94	30	42	40
LSD (P=0.05)					27	26	25	22	15	17

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code					CHEAL[a]	CHEAL	CHEAL	POROL	POROL	POROL
Crop Code										
Rating Data Type					Control	Control	Control	Control	Control	Control
Rating Date					7-Oct	15-Oct	18-Nov	7-Oct	15-Oct	18-Nov
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
1	Check				0	0	0	0	0	0
2	Linuron (Lorox)	0.05	LB A/A	PRE	81	73	75	51	68	75
3	Linuron	0.1	LB A/A	PRE	80	80	82	73	80	85
4	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	74	85	84	81	97	97
5	Dimethenamid-p (Outlook)	0.25	LB A/A	PRE	56	61	81	70	63	86
6	Dimethenamid-p	0.5	LB A/A	PRE	85	94	94	85	97	98
7	Thiobencarb (Bolero)	1	LB A/A	PRE	69	75	79	84	93	95
8	Thiobencarb	2	LB A/A	PRE	68	56	60	88	70	72
9	Flufenacet (Define)	0.15	LB A/A	PRE	59	59	59	73	60	64
10	Flufenacet	0.3	LB A/A	PRE	80	75	74	88	76	76
11	Trifloxysulfuron (Envoke)	0.00125	LB A/A	PRE	63	30	38	49	9	20
12	s-Metolachlor Linuron	0.5 0.05	LB A/A LB A/A	PRE PRE	74	83	88	85	96	98
13	Flumioxazin (Valor)	0.008	LB A/A	PRE	94	98	100	97	100	100
14	Flumioxazin	0.016	LB A/A	PRE	93	100	100	96	100	100
15	s-Metolachlor Clopyralid (Stinger)	0.5 0.08	LB A/A LB A/A	PRE POST	84	83	85	90	92	95
16	s-Metolachlor Phenmedipham (Spin-Aid)	0.5 0.4	LB A/A LB A/A	PRE POST	96	100	99	97	100	100

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code					CHEAL[a]	CHEAL	CHEAL	POROL	POROL	POROL
Crop Code										
Rating Data Type					Control	Control	Control	Control	Control	Control
Rating Date					7-Oct	15-Oct	18-Nov	7-Oct	15-Oct	18-Nov
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					
17	Pyrazon (Pyramin)	1.8	LB A/A	PRE	96	100	100	96	100	100
18	Pyrazon	3.6	LB A/A	PRE	96	100	100	96	100	100
19	Pendimethalin (Prowl)	0.5	LB A/A	PRE	91	98	99	94	100	100
LSD (P=0.05)					21	30	25	15	26	22

[a] Weed Codes: CHEAL, common lambsquarters; POROL, common purslane; LAMAM, henbit; MATMT, pineappleweed

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code					LAMAM	LAMAM	LAMAM	MATMT	MATMT	
Crop Code										Spinach
Rating Data Type					Control	Control	Control	Control	Control	Yield
Rating Date					7-Oct	15-Oct	18-Nov	15-Oct	18-Nov	19-Dec
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					ton/A
1	Check				0	0	0	0	0	14
2	Linuron (Lorox)	0.05	LB A/A	PRE	81	63	68	78	84	12
3	Linuron	0.1	LB A/A	PRE	83	86	94	90	95	12
4	s-Metolachlor (Dual Magnum)	0.5	LB A/A	PRE	85	90	90	92	95	16
5	Dimethenamid-p (Outlook)	0.25	LB A/A	PRE	74	61	89	61	89	14
6	Dimethenamid-p	0.5	LB A/A	PRE	91	92	95	92	95	13
7	Thiobencarb (Bolero)	1	LB A/A	PRE	79	75	78	59	66	16
8	Thiobencarb	2	LB A/A	PRE	84	70	70	68	70	13
9	Flufenacet (Define)	0.15	LB A/A	PRE	81	63	73	66	59	14
10	Flufenacet	0.3	LB A/A	PRE	88	88	91	90	92	13
11	Trifloxysulfuron (Envoke)	0.00125	LB A/A	PRE	68	10	28	20	40	9
12	s-Metolachlor	0.5	LB A/A	PRE	90	89	93	90	95	16
	Linuron	0.05	LB A/A	PRE						
13	Flumioxazin (Valor)	0.008	LB A/A	PRE	94	90	92	92	95	11
14	Flumioxazin	0.016	LB A/A	PRE	97	98	100	100	100	3
15	s-Metolachlor	0.5	LB A/A	PRE	84	83	95	95	90	11
	Clopyralid (Stinger)	0.08	LB A/A	POST						
16	s-Metolachlor	0.5	LB A/A	PRE	97	100	100	100	100	8
	Phenmedipham (Spin-Aid)	0.4	LB A/A	POST						

Herbicide Evaluation for Fall Spinach

University of Arkansas

Trial ID: KIB 0302 Study Dir.: Talbert, Ottis, Malik, Ellis

Location: Kibler, AR Investigator: Weed Science

Weed Code					LAMAM	LAMAM	LAMAM	MATMT	MATMT	
Crop Code										Spinach
Rating Data Type					Control	Control	Control	Control	Control	Yield
Rating Date					7-Oct	15-Oct	18-Nov	15-Oct	18-Nov	19-Dec
Trt No.	Treatment Name	Rate	Rate Unit	Grow Stg	%					ton/A
17	Pyrazon (Pyramin)	1.8	LB A/A	PRE	96	100	100	100	100	9
18	Pyrazon	3.6	LB A/A	PRE	97	100	100	100	100	4
19	Pendimethalin (Prowl)	0.5	LB A/A	PRE	88	93	97	92	96	2
LSD (P=0.05)					12	27	21	27	23	4

[a] Weed Codes: CHEAL, common lambsquarters; POROL, common purslane; LAMAM, henbit; MATMT, pineappleweed

APPENDIX

Abbreviations

BKPK – Backpack sprayer
LB A/A – Pounds of active ingredient/acre
LPOST – Late postemergence
PPI – Preplant incorporated
POST – Postemergence
PRE – Preemergence
REPLT – Replant

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