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Herbicide Evaluation in Arkansas Rice 2000

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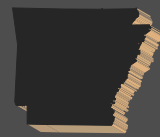
Authors

Ron Talbert, Ford Baldwin, Ken Smith, David Gealy, Eric Scherder, Mike Lovelace, Nathan Buehring, and Marilyn McClelland

Herbicide Evaluation in Arkansas Rice



2000



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David Gealy, Eric Scherder, Mike Lovelace,
Nathan Buehring, and Marilyn McClelland



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DIVISION OF AGRICULTURE

HERBICIDE EVALUATION IN ARKANSAS RICE, 2000

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HERBICIDE EVALUATION IN ARKANSAS RICE, 2000

*Ron Talbert, Ford Baldwin, Ken Smith, David Gealy, Eric Scherder,
Mike Lovelace, Nathan Buehring, and Marilyn McClelland*

INTRODUCTION

With the widespread development of resistance to propanil by barnyardgrass, the major weed in rice, research has been intensified in recent years to develop alternative weed control technology to the repeated use of propanil. The use of herbicides is economically important for production of rice. Field experiments are conducted annually in Arkansas to evaluate the activity of developmental and commercial herbicides for selective control of barnyardgrass and other weeds in rice. These experiments serve both industry and Arkansas agriculture by providing information on the selectivity of herbicides still in the developmental stage and by comparing the activity of these new herbicides with that of recommended herbicides.

The research reported herein is a compilation of data from experiments conducted by Ronald Talbert and his assistants, Eric Scherder, Research Specialist; Mike Lovelace, Research Specialist; and Nathan Buehring, Graduate Assistant, located at the Main Experiment Station, Fayetteville, and conducting research at Fayetteville and at the Rice Research and Extension Center, Stuttgart.

Common names of the herbicides presented in data tables are referenced to trade names and sponsoring companies in Appendix Table 1. The scientific names of the plants evaluated and their associated Bayer codes are listed in Appendix Table 2. Climatological data for 1999 are presented in Appendix Tables 3 thru 6.

GENERAL METHODS, 2000

Pertinent information specific to each field test precedes each data table. Included is information on general field conditions, field maintenance, and herbicide application and general conclusions from the data. All test areas were fertilized as recommended from soil tests. Weed densities were taken in most experiments and are presented in each table. Densities, expressed as no./ft², are natural populations. Those expressed as no./row ft were seeded in rows across the rice rows.

The herbicides used in these studies are designated in the tables by the common name proposed to or accepted by the Weed Science Society of America or, when common names are unavailable, by code number designation. A trade name is specified for compounds having more than one trade name or manufacturer. The Stam® EC formulation was used where propanil formulation is not designated. Herbicides formulated as prepackaged mixtures are listed in tables by their component herbicides in parentheses. All herbicide rates are expressed in pounds of active ingredient (lb/A) on a broadcast basis. Adjuvant rates are expressed as percent volume/volume.

The standard procedures outlined here were used throughout all the studies unless otherwise specified. All studies were conducted at the Rice Research and Extension Center at Stuttgart, Arkansas, on a DeWitt silt loam (fine, smectitic, thermic, Typic, Albaqualfs) with

1% organic matter and a pH of 5.3. Rice was seeded May 14, 2000, in plots eight rows wide (7-in row spacing) and 16 ft in length. The rice cultivar Wells was used in all tests unless otherwise specified. Propanil-resistant and -susceptible barnyardgrass (*Echinochloa crus-galli*), broadleaf signalgrass (*Brachiaria platyphylla*), pitted morningglory (*Ipomoea lacunosa*), tall morningglory (*Ipomoea purpurea*), northern jointvetch (*Aeschynomene virginica*), and hemp sesbania (*Sesbania exaltata*) were sown in single rows perpendicular to the rows of rice. Evaluations for the control of weeds, along with natural infestations of propanil-resistant barnyardgrass, bearded sprangletop (*Leptochloa fascicularis*), Amazon sprangletop (*Leptochloa panicoides*), and broadleaf signalgrass (if present) were made.

Visual ratings of rice injury, rice biomass reduction, and weed control were taken 7, 14, 21, 28, 42, and 56 days after rice emergence (DAE) for soil-applied herbicides and over these same time periods as days after treatment (DAT) for postemergence treatments. Percentages of weed control and crop injury were visually estimated: 0% represents no effect, and 100% represents complete kill. Rice yield was taken from the four center rows and adjusted to 12% moisture. Rice yield is reported as lb/A; 1 bushel = 45 pounds. Data were subjected to analysis of variance, and the LSD (least significant difference) test at the 5% level of significance was used for separation of means.

ABBREVIATIONS OF TERMS

The following abbreviations are used in tables:

BF,	before flood
BkPkCO ₂ ,	CO ₂ backpack sprayer
Cot.,	cotyledon
DAT,	days after treatment
DF,	dry flowable formulation
DPRE,	delayed preemergence
EC,	emulsifiable concentrate
EPOST,	early postemergence
F,	flowable formulation
<i>fb</i> ,	followed by
form.,	formulation
FF,	flat fan nozzle
Gpa,	gallons per acre
G or GR,	granular formulation
lf,	leaf
LPOST,	late postemergence
LSD,	least significant difference
ME,	microencapsulated
MP-44,	annual weed control recommendations for Arkansas
MPOST,	mid-postemergence timing
N-ECHCG,	natural population of barnyardgrass
N/A,	not applicable or not available
Noz,	nozzles
NS,	not significant
PI,	panicle initiation
POFL,	after flood
POST,	postemergence
PPI,	preplant incorporated
PPL,	preplant (not incorporated)
PRE,	preemergence
PREFL,	preflood
RCB,	randomized complete block (experimental design)
R-ECHCG,	propanil-resistant barnyardgrass
S-ECHCG,	propanil-susceptible barnyardgrass
Till,	tillering
WAF,	weeks after flood
XR,	extended range nozzle

Table 1. Graminicides, rates, and timings, Stuttgart, 2000.

SUMMARY

Fenoxaprop + safener (Ricestar), cyhalofop-butyl (Clincher), and clefoxydim (Aura) were evaluated for their grass activity on propanil-resistant and -susceptible barnyardgrass, broadleaf signalgrass, and Amazon sprangletop. Each herbicide was evaluated at three rates at 2- to 3-leaf and 4- to 6-leaf grass stages and as a sequential treatment at both timings. Fenoxaprop + safener was evaluated at 0.04, 0.06, and 0.08 lb ai/A; cyhalofop-butyl was evaluated at 0.125, 0.188, and 0.25 lb ai/A; and clefoxydim was evaluated at 0.0445, 0.067, and 0.089 lb ai/A

For effective control of propanil-resistant and -susceptible barnyardgrass and Amazon sprangletop two applications were needed for each of these graminicides. Fenoxaprop + isoxadifen, regardless of rate, controlled broadleaf signalgrass at either application timing or in a sequential program. Cyhalofop-butyl and clefoxydim controlled broadleaf signalgrass >86% at the 4- to 6-leaf timing only. This level of control, however, has not been observed in previous research with these two compounds.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 20, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Bengal
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: 2-3 LF = 2- to 3-leaf rice; and PREFL = pre flood.

	2-3 LF	PREFL
Application type	2-3 LF	PREFL
Date applied	June 2, 2000	June 18, 2000
Time	9:00 am	7:00 pm
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	89 / 82	82 / 78
Relative humidity (%)	58	77
Wind (mph)	1	3
Cloud cover (%)	10	70
Soil moisture	saturated	saturated
Crop stage/Height	2 lf / 6"	4 lf / 11"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	18 / 3 / 18	25 / 3 / 18
Gpa / Psi	10 / 20	10 / 20
Weed species (density)	----- [# leaves/height (in.)] -----	
S-ECHCG (10/row ft)	1 lf / 0.5"	4 lf / 8"
R-ECHCG (26/row ft)	2 lf / 2"	5 lf / 12"
N-ECHCG (8/ft ²)	2 lf / 2"	8 lf / 12"
BRAPP (22/row ft)	2 lf / 1"	5 lf / 6"

Table 1. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control							
			Resistant (R-ECHCG)				Susceptible (S-ECHCG)			
			6/8	6/28	7/18	8/16	6/8	6/28	7/18	8/16
----- (%) -----										
1 (Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF 2-3 LF	89	92	94	95	89	76	75	78
2 (Fenoxaprop + safener) + Agri-Dex	0.06 1%	2-3 LF 2-3 LF	94	95	96	96	93	90	82	85
3 (Fenoxaprop + safener) + Agri-Dex	0.08 1%	2-3 LF 2-3 LF	95	98	95	98	95	91	78	84
4 Cyhalofop + Agri-Dex	0.125 2.5%	2-3 LF 2-3 LF	73	74	80	66	73	71	63	63
5 Cyhalofop + Agri-Dex	0.188 2.5%	2-3 LF 2-3 LF	79	69	88	74	81	69	68	64
6 Cyhalofop + Agri-Dex	0.25 2.5%	2-3 LF 2-3 LF	83	80	85	80	85	75	65	66
7 Clefoxydim + Agri-Dex	0.0445 1%	2-3 LF 2-3 LF	88	79	90	70	88	70	68	64
8 Clefoxydim + Agri-Dex	0.067 1%	2-3 LF 2-3 LF	91	88	95	83	94	75	70	74
9 Clefoxydim + Agri-Dex	0.089 1%	2-3 LF 2-3 LF	94	88	92	91	94	80	75	78
10 (Fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL PREFL	0	48	71	43	0	48	55	45
11 (Fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL PREFL	0	49	86	65	0	51	68	64
12 (Fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL PREFL	0	63	91	83	0	64	76	73
13 Cyhalofop + Agri-Dex	0.125 2.5%	PREFL PREFL	0	43	65	56	0	44	56	56
14 Cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL	0	41	76	69	0	43	65	65
15 Cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL	0	59	88	93	0	53	70	84
16 Clefoxydim + Agri-Dex	0.0445 1%	PREFL PREFL	0	49	55	43	0	46	50	45
17 Clefoxydim + Agri-Dex	0.067 1%	PREFL PREFL	0	68	95	90	0	64	81	84
18 Clefoxydim + Agri-Dex	0.089 1%	PREFL PREFL	0	81	98	98	0	76	91	92
19 (Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.04 1%	2-3 LF 2-3 LF	90	98	98	96	91	93	95	90
(fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL PREFL								
20 (Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.06 1%	2-3 LF 2-3 LF	95	98	98	98	95	98	98	96
(fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL PREFL								
21 (Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.08 1%	2-3 LF 2-3 LF	95	98	98	98	95	96	98	98
(fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL PREFL								

continued

Table 1. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Resistant (R-ECHCG)				Susceptible (S-ECHCG)				
			6/8	6/28	7/18	8/16	6/8	6/28	7/18	8/16	
			----- (%) -----								
22	Cyhalofop + Agri-Dex <i>fb</i>	0.125 2.5%	2-3 LF 2-3 LF	71	96	98	96	71	87	92	96
	cyhalofop + Agri-Dex	0.125 2.5%	PREFL PREFL								
23	Cyhalofop + Agri-Dex <i>fb</i>	0.188 2.5%	2-3 LF 2-3 LF	81	98	98	98	81	96	96	96
	cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL								
24	Cyhalofop + Agri-Dex <i>fb</i>	0.25 2.5%	2-3 LF 2-3 LF	85	98	98	98	86	98	96	96
	cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL								
25	Clefoxydim + Agri-Dex <i>fb</i>	0.0445 1%	2-3 LF 2-3 LF	84	96	98	95	84	90	96	88
	clefoxydim + Agri-Dex	0.0445 1%	PREFL PREFL								
26	Clefoxydim + Agri-Dex <i>fb</i>	0.067 1%	2-3 LF 2-3 LF	93	98	98	98	93	98	98	98
	clefoxydim + Agri-Dex	0.067 1%	PREFL PREFL								
27	Clefoxydim + Agri-Dex <i>fb</i>	0.089 1%	2-3 LF 2-3 LF	94	98	98	98	94	96	96	96
	clefoxydim + Agri-Dex	0.089 1%	PREFL PREFL								
28	Untreated			0	0	0	0	0	0	0	0
LSD (0.05)				4	11	10	14	5	10	10	12

continued

Table 1. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Broadleaf signalgrass (BRAPP)				Amazon sprangletop (LEFPA)		
			6/8	6/28	7/18	8/16	7/18	8/16	
			----- (%) -----						
1	(Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF 2-3 LF	88	93	98	95	98	95
2	(Fenoxaprop + safener) + Agri-Dex	0.06 1%	2-3 LF 2-3 LF	93	96	98	95	98	98
3	(Fenoxaprop + safener) + Agri-Dex	0.08 1%	2-3 LF 2-3 LF	94	98	98	98	98	96
4	Cyhalofop + Agri-Dex	0.125 2.5%	2-3 LF 2-3 LF	70	74	91	64	90	85
5	Cyhalofop + Agri-Dex	0.188 2.5%	2-3 LF 2-3 LF	75	74	85	67	98	81
6	Cyhalofop + Agri-Dex	0.25 2.5%	2-3 LF 2-3 LF	84	78	90	80	97	92

continued

Table 1. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Broadleaf signalgrass (BRAPP)				Amazon sprangletop (LEFPA)		
			6/8	6/28	7/18	8/16	7/18	8/16	
			----- (%) -----						
7	Clefoxydim + Agri-Dex	0.0445 1%	2-3 LF 2-3 LF	66	68	79	63	92	85
8	Clefoxydim + Agri-Dex	0.067 1%	2-3 LF 2-3 LF	88	82	92	67	89	96
9	Clefoxydim + Agri-Dex	0.089 1%	2-3 LF 2-3 LF	85	82	92	82	95	88
10	(Fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL PREFL	0	75	92	94	73	70
11	(Fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL PREFL	0	88	98	89	75	86
12	(Fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL PREFL	0	81	98	98	76	88
13	Cyhalofop + Agri-Dex	0.125 2.5%	PREFL PREFL	0	50	85	90	66	33
14	Cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL	0	54	88	98	50	45
15	Cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL	0	55	92	88	68	68
16	Clefoxydim + Agri-Dex	0.0445 1%	PREFL PREFL	0	40	75	55	66	45
17	Clefoxydim + Agri-Dex	0.067 1%	PREFL PREFL	0	54	87	87	81	81
18	Clefoxydim + Agri-Dex	0.089 1%	PREFL PREFL	0	74	91	98	96	88
19	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.04 1%	2-3 LF 2-3 LF	91	98	98	98	98	98
	(fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL PREFL						
20	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.06 1%	2-3 LF 2-3 LF	95	98	98	98	98	98
	(fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL PREFL						
21	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.08 1%	2-3 LF 2-3 LF	94	98	98	98	98	98
	(fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL PREFL						
22	Cyhalofop + Agri-Dex <i>fb</i>	0.125 2.5%	2-3 LF 2-3 LF	73	93	98	98	98	96
	cyhalofop + Agri-Dex	0.125 2.5%	PREFL PREFL						
23	Cyhalofop + Agri-Dex <i>fb</i>	0.188 2.5%	2-3 LF 2-3 LF	78	98	98	98	98	98
	cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL						
24	Cyhalofop + Agri-Dex <i>fb</i>	0.25 2.5%	2-3 LF 2-3 LF	78	98	98	98	98	98
	cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL						

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 1. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Broadleaf signalgrass (BRAPP)				Amazon sprangletop (LEFPA)		
			6/8	6/28	7/18	8/16	7/18	8/16	
			----- (%) -----						
25	Clefoxydim + Agri-Dex <i>fb</i>	0.0445 1%	2-3 LF	68	90	96	89	98	90
	clefoxydim + Agri-Dex	0.0445 1%	PREFL						
26	Clefoxydim + Agri-Dex <i>fb</i>	0.067 1%	2-3 LF	79	94	98	98	98	98
	clefoxydim + Agri-Dex	0.067 1%	PREFL						
27	Clefoxydim + Agri-Dex <i>fb</i>	0.089 1%	2-3 LF	84	98	98	98	98	98
	clefoxydim + Agri-Dex	0.089 1%	PREFL						
28	Untreated			0	0	0	0	0	0
LSD (0.05)				7	14	9	17	13	12

continued

Table 1. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice					
			Injury				Yield	
			6/8	6/28	7/18	8/16	9/20	
			----- (%) -----					
1	(Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF	16	5	0	0	6646
			2-3 LF					
2	(Fenoxaprop + safener) + Agri-Dex	0.06 1%	2-3 LF	20	10	0	0	8442
			2-3 LF					
3	(Fenoxaprop + safener) + Agri-Dex	0.08 1%	2-3 LF	31	10	0	0	8452
			2-3 LF					
4	Cyhalofop + Agri-Dex	0.125 2.5%	2-3 LF	0	0	0	0	6748
			2-3 LF					
5	Cyhalofop + Agri-Dex	0.188 2.5%	2-3 LF	0	0	0	0	6409
			2-3 LF					
6	Cyhalofop + Agri-Dex	0.25 2.5%	2-3 LF	4	3	0	0	7213
			2-3 LF					
7	Clefoxydim + Agri-Dex	0.0445 1%	2-3 LF	3	0	0	0	6862
			2-3 LF					
8	Clefoxydim + Agri-Dex	0.067 1%	2-3 LF	8	0	0	0	7886
			2-3 LF					
9	Clefoxydim + Agri-Dex	0.089 1%	2-3 LF	15	4	0	0	7405
			2-3 LF					
10	(Fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL	0	6	0	0	5405
			PREFL					
11	(Fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL	0	5	0	0	6803
			PREFL					
12	(Fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL	0	5	0	0	8168
			PREFL					
13	Cyhalofop + Agri-Dex	0.125 2.5%	PREFL	0	3	0	0	4704
			PREFL					

continued

Table 1. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice				Yield 9/20 (lb/A)	
			Injury					
			6/8	6/28	7/18	8/16		
			----- (%) -----					
14	Cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL	0 3	0 0	0 0	5407	
15	Cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL	0 5	0 0	0 0	7349	
16	Clefoxydim + Agri-Dex	0.0445 1%	PREFL PREFL	0 3	0 0	0 0	4270	
17	Clefoxydim + Agri-Dex	0.067 1%	PREFL PREFL	0 6	0 0	0 0	8168	
18	Clefoxydim + Agri-Dex	0.089 1%	PREFL PREFL	0 10	3 0	0 0	8588	
19	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.04 1%	2-3 LF 2-3 LF	13 8	3 0	0 0	9460	
	(fenoxaprop + safener) + Agri-Dex	0.04 1%	PREFL PREFL					
20	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.06 1%	2-3 LF 2-3 LF	26 6	4 0	0 0	9504	
	(fenoxaprop + safener) + Agri-Dex	0.06 1%	PREFL PREFL					
21	(Fenoxaprop + safener) + Agri-Dex <i>fb</i>	0.08 1%	2-3 LF 2-3 LF	30 3	0 0	0 0	9181	
	(fenoxaprop + safener) + Agri-Dex	0.08 1%	PREFL PREFL					
22	Cyhalofop + Agri-Dex <i>fb</i>	0.125 2.5%	2-3 LF 2-3 LF	0 0	0 0	0 0	9238	
	cyhalofop + Agri-Dex	0.125 2.5%	PREFL PREFL					
23	Cyhalofop + Agri-Dex <i>fb</i>	0.188 2.5%	2-3 LF 2-3 LF	3 4	0 0	0 0	9508	
	cyhalofop + Agri-Dex	0.188 2.5%	PREFL PREFL					
24	Cyhalofop + Agri-Dex <i>fb</i>	0.25 2.5%	2-3 LF 2-3 LF	3 3	0 0	0 0	9524	
	cyhalofop + Agri-Dex	0.25 2.5%	PREFL PREFL					
25	Clefoxydim + Agri-Dex <i>fb</i>	0.0445 1%	2-3 LF 2-3 LF	5 3	0 0	0 0	8613	
	clefoxydim + Agri-Dex	0.0445 1%	PREFL PREFL					
26	Clefoxydim + Agri-Dex <i>fb</i>	0.067 1%	2-3 LF 2-3 LF	15 5	0 0	0 0	8493	
	clefoxydim + Agri-Dex	0.067 1%	PREFL PREFL					
27	Clefoxydim + Agri-Dex <i>fb</i>	0.089 1%	2-3 LF 2-3 LF	16 10	0 0	0 0	8654	
	clefoxydim + Agri-Dex	0.089 1%	PREFL PREFL					
28	Untreated			0	0	0	0	838
	LSD (0.05)			6	8	3	0	2010

Table 2. Antagonism of graminicides tank-mixed with broadleaf herbicides, Stuttgart, 2000.

SUMMARY

Antagonism is the joint action of two herbicides (or other chemicals) such that the activity on a target species is less than would be expected if the herbicides were applied alone. The activity of fenoxaprop + safener (Ricestar), cyhalofop-butyl (Clincher), and clefoxydim (Aura) was evaluated for potential antagonism at the 4- to 5-leaf grass stage for barnyardgrass control when applied in combination with the broadleaf herbicides: bentazon + acifluorfen (Storm), bentazon (Basagran), acifluorfen (Blazer), triclopyr (Grandstand), bensulfuron (Londax), halosulfuron (Permit), carfentrazone-ethyl (Aim), or propanil (Stam M-4). Fenoxaprop + safener at 0.08 lb ai/A, cyhalofop-butyl at 0.25 lb ai/A, and clefoxydim at 0.089 lb ai/A were tank-mixed with each broadleaf herbicide applied at a labeled rate. The three graminicides were also applied alone to determine their level of grass control if antagonism is not present.

Antagonism of propanil-resistant and -susceptible barnyardgrass control was observed when fenoxaprop + isoxadifen was tank-mixed with halosulfuron or propanil: 68% and 38% control, respectively, as compared to 84% control when applied alone. All broadleaf herbicides antagonized barnyardgrass control when tank-mixed with cyhalofop-butyl except bentazon, acifluorfen, or bensulfuron. Clefoxydim activity on barnyardgrass was antagonized only when applied in combination with bentazon + acifluorfen, bentazon, or propanil.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 20, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Bengal
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: 4-5 LF = 4- to 5-leaf rice.

Application type	4-5 LF
Date applied	June 16, 2000
Time	5:00 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	86 / 88
Relative humidity (%)	70
Wind (mph)	6
Cloud cover (%)	30
Soil moisture	moist
Crop stage/Height	5 lf / 8"
Sprayer type/mph	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	18 / 3 / 18
Gpa / Psi	10 / 20
Weed species (density)	[# leaves/height (in.)]
S-ECHCG (20/row ft)	4 lf / 5"
R-ECHCG (22/row ft)	5 lf / 8"
N-ECHCG (3/ft ²)	8 lf / 9"
BRAPP (40/row ft)	6 lf / 3"
LEFPA (5/ft ²)	5 lf / 2"
CYPIR (8/ft ²)	4 lf / 4"

Table 2. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control							
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)			
			6/8	6/28	7/18	8/16	6/8	6/28	7/18	8/16
----- (%) -----										
1 (Fenoxaprop + safener) + Agri-Dex + (acifluorfen + bentazon)	0.08 1% 1.5	4-5LF 4-5 LF 4-5 LF	83	76	70	69	86	88	89	86
2 (Fenoxaprop + safener) + Agri-Dex + bentazon	0.08 1% 1.5	4-5 LF 4-5 LF 4-5 LF	74	76	83	90	75	89	95	96
3 (Fenoxaprop + safener) + Agri-Dex + acifluorfen	0.08 1% 1.0	4-5 LF 4-5 LF 4-5 LF	79	76	75	75	85	88	90	84
4 (Fenoxaprop + safener) + Agri-Dex + triclopyr	0.08 1% 0.38	4-5 LF 4-5 LF 4-5 LF	85	81	74	75	90	89	88	86
5 (Fenoxaprop + safener) + Agri-Dex + bensulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	65	75	84	78	66	85	92	90
6 (Fenoxaprop + safener) + Agri-Dex + halosulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	53	58	61	59	54	64	70	68
7 (Fenoxaprop + safener) + Agri-Dex + carfentrazone	0.08 1% 0.02	4-5 LF 4-5 LF 4-5 LF	73	86	92	91	75	86	94	95
8 (Fenoxaprop + safener) + Agri-Dex + propanil	0.08 1% 4.0	4-5 LF 4-5 LF 4-5 LF	35	43	45	38	34	43	48	38
9 (Fenoxaprop + safener) + Agri-Dex +	0.08 1%	4-5 LF 4-5 LF	79	80	80	75	80	88	91	84
10 Cyhalofop + Agri-Dex + (acifluorfen + bentazon)	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	66	63	58	45	69	68	60	54
11 Cyhalofop + Agri-Dex + bentazon	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	65	63	63	61	66	66	65	68
12 Cyhalofop + Agri-Dex + acifluorfen	0.25 2.5% 1.0	4-5 LF 4-5 LF 4-5 LF	80	75	66	61	79	78	73	70
13 Cyhalofop + Agri-Dex + triclopyr	0.25 2.5% 0.38	4-5 LF 4-5 LF 4-5 LF	80	74	66	56	85	80	76	61
14 Cyhalofop + Agri-Dex + bensulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	54	60	64	64	56	69	73	72
15 Cyhalofop + Agri-Dex + halosulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	45	51	53	48	43	49	53	56
16 Cyhalofop + Agri-Dex + carfentrazone	0.25 2.5% 0.02	4-5 LF 4-5 LF 4-5 LF	68	68	65	55	73	75	76	61

continued

Table 2. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)				
			6/8	6/28	7/18	8/16	6/8	6/28	7/18	8/16	
			----- (%) -----								
17	Cyhalofop + Agri-Dex + propanil	0.25 2.5% 4.0	4-5 LF 4-5 LF 4-5 LF	63	60	55	49	65	63	55	55
18	Cyhalofop + Agri-Dex	0.25 2.5%	4-5 LF 4-5 LF	69	71	74	75	73	81	85	82
19	Clefoxydim + Agri-Dex + (acifluorfen + bentazon)	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	46	55	60	45	56	60	63	50
20	Clefoxydim + Agri-Dex + bentazon	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	38	40	40	33	43	44	40	33
21	Clefoxydim + Agri-Dex + acifluorfen	0.089 1% 1.0	4-5 LF 4-5 LF 4-5 LF	83	82	81	92	84	84	87	94
22	Clefoxydim + Agri-Dex + triclopyr	0.089 1% 0.38	4-5 LF 4-5 LF 4-5 LF	85	80	70	71	92	85	82	85
23	Clefoxydim + Agri-Dex + bensulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	69	73	74	76	75	83	88	85
24	Clefoxydim + Agri-Dex + halosulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	65	71	74	73	69	81	87	86
25	Clefoxydim + Agri-Dex + carfentrazone	0.089 1% 0.02	4-5 LF 4-5 LF 4-5 LF	74	78	80	85	80	85	91	94
26	Clefoxydim + Agri-Dex + propanil	0.089 1% 4.0	4-5 LF 4-5 LF 4-5 LF	35	40	40	33	35	40	40	33
27	Clefoxydim + Agri-Dex	0.089 1%	4-5 LF 4-5 LF	71	80	85	88	76	90	98	94
28	Untreated			0	0	0	0	0	0	0	0
LSD (0.05)				12	10	10	17	14	10	13	20

continued

Table 2. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control					
			Broadleaf signalgrass (BRAPP)				Amazon sprangletop (LEFPA)	
			6/8	6/28	7/18	8/16	7/18	8/16
			----- (%) -----					
1 (Fenoxaprop + safener) + Agri-Dex + (acifluorfen + bentazon)	0.08 1% 1.5	4-5LF 4-5 LF 4-5 LF	92	93	98	89	87	84
2 (Fenoxaprop + safener) + Agri-Dex + bentazon	0.08 1% 1.5	4-5 LF 4-5 LF 4-5 LF	93	92	98	98	98	97
3 (Fenoxaprop + safener) + Agri-Dex + acifluorfen	0.08 1% 1.0	4-5 LF 4-5 LF 4-5 LF	94	93	98	98	93	98
4 (Fenoxaprop + safener) + Agri-Dex + triclopyr	0.08 1% 0.38	4-5 LF 4-5 LF 4-5 LF	93	91	97	98	98	90
5 (Fenoxaprop + safener) + Agri-Dex + bensulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	90	91	96	98	92	89
6 (Fenoxaprop + safener) + Agri-Dex + halosulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	90	93	98	98	91	89
7 (Fenoxaprop + safener) + Agri-Dex + carfentrazone	0.08 1% 0.02	4-5 LF 4-5 LF 4-5 LF	95	93	95	98	94	96
8 (Fenoxaprop + safener) + Agri-Dex + propanil	0.08 1% 4.0	4-5 LF 4-5 LF 4-5 LF	94	93	98	91	69	79
9 (Fenoxaprop + safener) + Agri-Dex +	0.08 1%	4-5 LF 4-5 LF	96	94	98	98	95	98
10 Cyhalofop + Agri-Dex + (acifluorfen + bentazon)	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	90	91	98	89	89	89
11 Cyhalofop + Agri-Dex + bentazon	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	84	84	94	86	87	63
12 Cyhalofop + Agri-Dex + acifluorfen	0.25 2.5% 1.0	4-5 LF 4-5 LF 4-5 LF	83	86	93	72	96	92
13 Cyhalofop + Agri-Dex + triclopyr	0.25 2.5% 0.38	4-5 LF 4-5 LF 4-5 LF	58	70	79	58	68	63
14 Cyhalofop + Agri-Dex + bensulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	54	68	78	82	77	69
15 Cyhalofop + Agri-Dex + halosulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	48	63	71	60	56	53
16 Cyhalofop + Agri-Dex + carfentrazone	0.25 2.5% 0.02	4-5 LF 4-5 LF 4-5 LF	75	80	83	98	68	60

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 2. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Broadleaf signalgrass (BRAPP)				Amazon sprangletop (LEFPA)		
			6/8	6/28	7/18	8/16	7/18	8/16	
			----- (%) -----						
17	Cyhalofop + Agri-Dex + propanil	0.25 2.5% 4.0	4-5 LF 4-5 LF 4-5 LF	93	90	92	98	95	88
18	Cyhalofop + Agri-Dex	0.25 2.5%	4-5 LF 4-5 LF	74	81	86	98	89	73
19	Clefoxydim + Agri-Dex + (acifluorfen + bentazon)	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	38	60	71	57	84	81
20	Clefoxydim + Agri-Dex + bentazon	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	56	71	78	40	50	60
21	Clefoxydim + Agri-Dex + acifluorfen	0.089 1% 1.0	4-5 LF 4-5 LF 4-5 LF	76	80	86	59	98	98
22	Clefoxydim + Agri-Dex + triclopyr	0.089 1% 0.38	4-5 LF 4-5 LF 4-5 LF	56	65	74	40	87	75
23	Clefoxydim + Agri-Dex + bensulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	76	85	93	93	98	86
24	Clefoxydim + Agri-Dex + halosulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	68	75	83	94	94	81
25	Clefoxydim + Agri-Dex + carfentrazone	0.089 1% 0.02	4-5 LF 4-5 LF 4-5 LF	70	80	87	57	93	79
26	Clefoxydim + Agri-Dex + propanil	0.089 1% 4.0	4-5 LF 4-5 LF 4-5 LF	63	81	90	81	53	78
27	Clefoxydim + Agri-Dex	0.089 1%	4-5 LF 4-5 LF	76	80	83	89	98	96
28	Untreated			0	0	0	0	0	0
LSD (0.05)				14	9	8	23	17	27

continued

Table 2. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice				Yield 9/20 (lb/A)
			Injury				
			6/8	6/28	7/18	8/16	
			----- (%) -----				
1 (Fenoxaprop + safener) + Agri-Dex + (acifluorfen + bentazon)	0.08 1% 1.5	4-5LF 4-5 LF 4-5 LF	13	9	0	0	5156
2 (Fenoxaprop + safener) + Agri-Dex + bentazon	0.08 1% 1.5	4-5 LF 4-5 LF 4-5 LF	9	6	0	0	6217
3 (Fenoxaprop + safener) + Agri-Dex + acifluorfen	0.08 1% 1.0	4-5 LF 4-5 LF 4-5 LF	20	15	0	0	6086
4 (Fenoxaprop + safener) + Agri-Dex + triclopyr	0.08 1% 0.38	4-5 LF 4-5 LF 4-5 LF	16	14	0	0	7449
5 (Fenoxaprop + safener) + Agri-Dex + bensulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	9	6	0	0	6281
6 (Fenoxaprop + safener) + Agri-Dex + halosulfuron	0.08 1% 0.063	4-5 LF 4-5 LF 4-5 LF	13	11	0	0	4107
7 (Fenoxaprop + safener) + Agri-Dex + carfentrazone	0.08 1% 0.02	4-5 LF 4-5 LF 4-5 LF	14	10	0	0	7018
8 (Fenoxaprop + safener) + Agri-Dex + propanil	0.08 1% 4.0	4-5 LF 4-5 LF 4-5 LF	4	4	0	0	1744
9 (Fenoxaprop + safener) + Agri-Dex +	0.08 1%	4-5 LF 4-5 LF	15	10	0	0	3317
10 Cyhalofop + Agri-Dex + (acifluorfen + bentazon)	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	16	13	0	0	2820
11 Cyhalofop + Agri-Dex + bentazon	0.25 2.5% 1.5	4-5 LF 4-5 LF 4-5 LF	11	10	0	0	3950
12 Cyhalofop + Agri-Dex + acifluorfen	0.25 2.5% 1	4-5 LF 4-5 LF 4-5 LF	21	16	0	0	4920
13 Cyhalofop + Agri-Dex + triclopyr	0.25 2.5% 0.38	4-5 LF 4-5 LF 4-5 LF	23	18	0	0	4149
14 Cyhalofop + Agri-Dex + bensulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	9	6	0	0	4396
15 Cyhalofop + Agri-Dex + halosulfuron	0.25 2.5% 0.063	4-5 LF 4-5 LF 4-5 LF	5	4	0	0	2412
16 Cyhalofop + Agri-Dex + carfentrazone	0.25 2.5% 0.02	4-5 LF 4-5 LF 4-5 LF	11	10	0	0	3435

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 2. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice				Yield 9/20 (lb/A)	
			Injury					
			6/8	6/28	7/18	8/16		
			----- (%) -----					
17	Cyhalofop + Agri-Dex + propanil	0.25 2.5% 4.0	4-5 LF 4-5 LF 4-5 LF	8	5	0	0	2348
18	Cyhalofop + Agri-Dex	0.25 2.5%	4-5 LF 4-5 LF	13	9	0	0	3545
19	Clefoxydim + Agri-Dex + (acifluorfen + bentazon)	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	18	13	0	0	2093
20	Clefoxydim + Agri-Dex + bentazon	0.089 1% 1.5	4-5 LF 4-5 LF 4-5 LF	4	4	0	0	1155
21	Clefoxydim + Agri-Dex + acifluorfen	0.089 1% 1.0	4-5 LF 4-5 LF 4-5 LF	19	16	0	0	5844
22	Clefoxydim + Agri-Dex + triclopyr	0.089 1% 0.38	4-5 LF 4-5 LF 4-5 LF	19	14	0	0	5093
23	Clefoxydim + Agri-Dex + bensulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	18	14	0	0	6216
24	Clefoxydim + Agri-Dex + halosulfuron	0.089 1% 0.063	4-5 LF 4-5 LF 4-5 LF	19	14	0	0	6799
25	Clefoxydim + Agri-Dex + carfentrazone	0.089 1% 0.02	4-5 LF 4-5 LF 4-5 LF	19	14	0	0	6260
26	Clefoxydim + Agri-Dex + propanil	0.089 1% 4.0	4-5 LF 4-5 LF 4-5 LF	4	3	0	0	1212
27	Clefoxydim + Agri-Dex	0.089 1%	4-5 LF 4-5 LF	14	9	0	0	4972
28	Untreated			0	0	0	0	835
	LSD (0.05)			8	7	0	0	2434

Table 3. Use of graminicides in herbicide programs, Stuttgart, 2000.**SUMMARY**

Fenoxaprop + safener (Ricestar), cyhalofop-butyl (Clincher), and clefoxydim (Aura) were evaluated at various rates as single and sequential applications at 2- to 3-leaf and 3- to 4-leaf grass stages. Each graminicide was also evaluated in a program approach with propanil (Stam M-4), acifluorfen + bentazon (Storm), quinclorac (Facet), or bensulfuron (Londax) each applied at labeled rates.

Sequential applications of the graminicides provided more effective control of broadleaf signalgrass, propanil-resistant and -susceptible barnyardgrass, and Amazon sprangletop than a single application. These graminicides also were effective in a postemergence programs with recommended rice herbicides.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 20, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Bengal
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: 2-3 LF = 2- to 3-leaf rice; 3-4 LF = 3- to 4-leaf rice; and PREFL = pre-flood.

Application type	2-3 LF	3-4 LF	PREFL
Date applied	June 2, 2000	June 6, 2000	June 18, 2000
Time	11:00 am	5:45 pm	7:30 pm
Incorporation equipment	N/A	N/A	N/A
Air/Soil temperature (F)	91 / 82	77 / 78	81 / 78
Relative humidity (%)	59	52	79
Wind (mph)	2	4	3
Cloud cover (%)	15	0	70
Soil moisture	saturated	moist	saturated
Crop stage/Height	2 lf / 6"	3 lf / 8"	4 lf / 11"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	17 / 3 / 18	17 / 3 / 18	25 / 3 / 18
Gpa / Psi	10 / 23	10 / 23	10 / 20
Weed species (density)	----- [# leaves/height (in.)] -----		
R-ECHCG (26/ft in row)	2 lf / 1.5"	3 lf / 3.5"	5 lf / 10"
S-ECHCG (18/ft in row)	1 lf / 0.5"	3 lf / 3"	4 lf / 7"
N-ECHCG (7/ft ²)	3 lf / 1"	4 lf / 4"	8 lf / 12"
BRAPP (23/ft in row)	1 lf / 1"	3 lf / 1"	6 lf / 5"
LEFPA (2.5/ft ²)	N/A	3 lf / 1"	5 lf / 5"

Herbicide Evaluation in Arkansas Rice, 2000

Table 3. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control										
			Resistant (R-ECHCG)					Susceptible (S-ECHCG)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
			----- (%) -----										
1	Clefoxydim (2000 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	93	98	94	98	89	91	98	96	86	85
2	Clefoxydim (2000 form.) + quinclorac + Agri-Dex	0.065 0.25 1%	2-3 LF 2-3 LF 2-3 LF	90	98	98	98	98	91	98	98	92	92
3	Clefoxydim (2000 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	0	97	96	96	93	0	98	95	86	81
4	Clefoxydim (2000 form.) + bensulfuron + Agri-Dex	0.091 0.038 1%	3-4 LF 3-4 LF 3-4 LF	0	98	97	98	88	0	98	96	90	83
5	(Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF 2-3 LF	91	98	98	96	85	93	98	98	85	77
6	(Fenoxaprop + safener) + Agri-Dex	0.06 1%	3-4 LF 3-4 LF	0	97	95	98	94	0	98	86	89	84
7	(Fenoxaprop + safener) fb (fenoxaprop + safener)	0.05 0.067	2-3 LF PREFL	93	98	98	98	98	93	98	98	98	98
8	(Propanil + molinate) fb (fenoxaprop + safener)	6.0 0.067	2-3 LF PREFL	66	40	85	98	96	66	95	88	92	95
9	Propanil fb (fenoxaprop + safener)	4.0 0.067	2-3 LF PREFL	65	40	75	98	96	69	95	86	88	89
10	Quinclorac + Agri-Dex fb (fenoxaprop + safener)	0.375 1% 0.067	2-3 LF 2-3 LF PREFL	81	98	98	98	98	85	98	98	92	98
11	Propanil fb (fenoxaprop + safener) + (acifluorfen + bentazon)	4.0 0.067 0.75	2-3 LF PREFL PREFL	65	15	78	58	83	68	95	85	86	81
12	Cyhalofop + Agri-Dex fb cyhalofop + Agri-Dex	0.25 2.5% 0.25 2.5%	2-3 LF 2-3 LF PREFL PREFL	84	97	98	98	98	86	97	98	98	98
13	Clefoxydim (2000 form.) + Agri-Dex fb clefoxydim (2000 form.) + Agri-Dex	0.0625 1% 0.0625 1%	2-3 LF 2-3 LF PREFL PREFL	90	98	98	98	98	90	98	98	98	98
14	Clefoxydim (1999 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	95	98	98	98	91	94	98	87	84	86
15	Clefoxydim (1999 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	0	97	96	98	81	0	97	94	88	74
16	Untreated			0	0	0	0	0	0	0	0	0	0
LSD (0.05)				7	20	7	8	10	7	4	8	5	11

continued

Table 3. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Broadleaf signalgrass (BRAPP)					Rice flatsedge (CYPIR)	Eclipta (ECLAL)
			6/9	6/15	6/28	7/18	8/16	7/18	8/16
			----- (%) -----						
1 Clefoxydim (2000 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	88	97	92	98	98	0	0
2 Clefoxydim (2000 form.) + quinclorac + Agri-Dex	0.065 0.25 1%	2-3 LF 2-3 LF 2-3 LF	88	98	98	98	98	96	96
3 Clefoxydim (2000 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	0	95	96	98	85	0	0
4 Clefoxydim (2000 form.) + bensulfuron + Agri-Dex	0.091 0.038 1%	3-4 LF 3-4 LF 3-4 LF	0	96	96	98	85	98	98
5 (Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF 2-3 LF	91	98	98	98	91	0	0
6 (Fenoxaprop + safener) + Agri-Dex	0.06 1%	3-4 LF 3-4 LF	0	97	98	98	98	0	25
7 (Fenoxaprop + safener) <i>fb</i> (fenoxaprop + safener)	0.05 0.067	2-3 LF PREFL	93	98	98	98	98	0	0
8 (Propanil + molinate) <i>fb</i> (fenoxaprop + safener)	6.0 0.067	2-3 LF PREFL	81	95	98	98	98	98	98
9 Propanil <i>fb</i> (fenoxaprop + safener)	4.0 0.067	2-3 LF PREFL	81	93	98	98	98	96	98
10 Quinclorac + Agri-Dex <i>fb</i> (fenoxaprop + safener)	0.375 1% 0.067	2-3 LF 2-3 LF PREFL	84	98	98	98	98	98	98
11 Propanil <i>fb</i> (fenoxaprop + safener) + (acifluorfen + bentazon)	4.0 0.067 0.75	2-3 LF PREFL PREFL	86	97	97	98	98	98	98
12 Cyhalofop + Agri-Dex <i>fb</i> cyhalofop + Agri-Dex	0.25 2.5% 0.25 2.5%	2-3 LF 2-3 LF PREFL PREFL	91	97	98	98	98	0	0
13 Clefoxydim (2000 form.) + Agri-Dex <i>fb</i> clefoxydim (2000 form.) + Agri-Dex	0.0625 1% 0.0625 1%	2-3 LF 2-3 LF PREFL PREFL	74	97	98	98	98	98	62
14 Clefoxydim (1999 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	91	97	98	98	78	0	0
15 Clefoxydim (1999 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	0	95	92	98	73	0	0
16 Untreated			0	0	0	0	0	0	0
LSD (0.05)			9	3	4	0	12	2	14

continued

Table 3. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Amazon sprangletop (LEFPA) control		Effect on rice					Yield 9/20 (lb/A)
			7/18	8/16	Injury					
					6/9	6/15	6/28	7/18	8/16	
					----- (%) -----					
1 Clefoxydim (2000 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	98	95	1	0	3	0	0	2736
2 Clefoxydim (2000 form.) + quinclorac + Agri-Dex	0.065 0.25 1%	2-3 LF 2-3 LF 2-3 LF	98	81	3	0	5	0	0	8115
3 Clefoxydim (2000 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	98	85	0	1	8	0	0	6269
4 Clefoxydim (2000 form.) + bensulfuron + Agri-Dex	0.091 0.038 1%	3-4 LF 3-4 LF 3-4 LF	98	91	0	0	0	0	0	5279
5 (Fenoxaprop + safener) + Agri-Dex	0.04 1%	2-3 LF 2-3 LF	98	77	9	9	16	0	0	3692
6 (Fenoxaprop + safener) + Agri-Dex	0.06 1%	3-4 LF 3-4 LF	98	96	0	0	3	0	0	3574
7 (Fenoxaprop + safener) <i>fb</i> (fenoxaprop + safener)	0.05 0.067	2-3 LF PREFL	98	98	8	9	18	0	0	5105
8 (Propanil + molinate) <i>fb</i> (fenoxaprop + safener)	6.0 0.067	2-3 LF PREFL	98	94	4	1	5	0	0	9012
9 Propanil <i>fb</i> (fenoxaprop + safener)	4.0 0.067	2-3 LF PREFL	98	94	3	0	0	0	0	7281
10 Quinclorac + Agri-Dex <i>fb</i> (fenoxaprop + safener)	0.375 1% 0.067	2-3 LF 2-3 LF PREFL	96	81	0	1	0	0	0	8497
11 Propanil <i>fb</i> (fenoxaprop + safener) + (acifluorfen + bentazon)	4.0 0.067 0.75	2-3 LF PREFL PREFL	98	98	3	1	25	0	0	7671
12 Cyhalofop + Agri-Dex <i>fb</i> cyhalofop + Agri-Dex	0.25 2.5% 0.25 2.5%	2-3 LF 2-3 LF PREFL PREFL	98	98	3	0	0	0	0	3827
13 Clefoxydim (2000 form.) + Agri-Dex <i>fb</i> clefoxydim (2000 form.) + Agri-Dex	0.0625 1% 0.0625 1%	2-3 LF 2-3 LF PREFL PREFL	98	98	0	1	11	0	0	7778
14 Clefoxydim (1999 form.) + Agri-Dex	0.065 1%	2-3 LF 2-3 LF	98	90	4	0	6	0	0	2323
15 Clefoxydim (1999 form.) + Agri-Dex	0.091 1%	3-4 LF 3-4 LF	98	76	0	0	6	0	0	2318
16 Untreated			0	0	0	0	0	0	0	1126
LSD (0.05)			1	15	7	3	7	0	0	2825

Table 4. Cyhalofop-butyl in herbicide programs for broad-spectrum weed control, Stuttgart, 2000.**SUMMARY**

Cyhalofop-butyl was evaluated in a herbicide program approach with clomazone (Command), quinclorac (Facet), propanil (Stam M-4), and triclopyr (Grandstand). Herbicide treatments were applied at 2- to 3-leaf and 4- to 6-leaf grass stages. Cyhalofop-butyl was applied at 0.188 lb ai/A, and all other herbicides were applied at labeled rates.

All of the treatments evaluated provided effective control of propanil-resistant and -susceptible barnyardgrass at the end of the season, except for those programs that relied only upon propanil for grass control. Sequential applications of cyhalofop-butyl were necessary for adequate control of barnyardgrass and broadleaf signalgrass. Broadleaf weed control, >86% at the end of the season, was attained with all treatments containing quinclorac, propanil, or triclopyr.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 20, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Bengal
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: PRE = preemergence; 2-3 LF = 2- to 3-leaf rice; PREFL = pre flood; and POFL = Postflood.

Application type	PRE	2-3 LF	PREFL	POFL
Date applied	May 18, 2000	June 2, 2000	June 18, 2000	July 5, 2000
Time	7:00 pm	2:30 pm	8:00 am	2:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	86 / 78	95 / 92	78 / 79	95 / 88
Relative humidity (%)	55	41	92	89
Wind (mph)	7	2	3	2
Cloud cover (%)	75	15	100	30
Soil moisture	dry	saturated	flooded	flooded
Crop stage/Height	N/A	2 lf / 6"	4 lf / 11"	7-8 lf / 18"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 11001
Boom ht / # Noz / Spacing (in.)	15 / 3 / 18	17 / 3 / 18	28 / 3 / 18	16 / 3 / 18
Gpa / Psi	10 / 30	10 / 22	10 / 20	10 / 30
Weed species (density)	----- [# leaves/height (in.)] -----			
R-ECHCG (17/ft in row)	N/A	2 lf / 2"	5 lf / 5"	7-8 lf / 13-15"
S-ECHCG (9/ft in row)	N/A	2 lf / 1.5"	4 lf / 4"	6-7 lf / 13-14"
N-ECHCG (7/ft ²)	N/A	3 lf / 2"	10 lf / 11'	
BRAPP (20/ft in row)	N/A	2 lf / 1"	4 lf / 3"	15+ lf / 9-11"
PHBPU (17.5/ft in row)	N/A	1 lf / 1.5"	5 lf / 3'	10-12 lf / 9-11"
AESVI (6/ft in row)	N/A	2 lf / 2"	N/A	10-12 lf / 9-11"
SEBEX (42/ft in row)	N/A	2 lf / 4"	N/A	11-13 lf / 15-18"

Table 4. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control										
			Resistant (R-ECHCG)					Susceptible (S-ECHCG)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
----- (%) -----													
1	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	74	91	98	98	98	75	69	98	91	96
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
2	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	75	91	98	96	96	75	71	97	90	94
	cyhalofop + triclopyr + propanil	0.187 0.25 1.0	PREFL PREFL PREFL										
3	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	80	94	98	98	98	78	91	98	96	98
	triclopyr + Agri-Dex	0.25 1.25%	PREFL PREFL										
4	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	83	95	98	98	98	80	94	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
5	Quinclorac + Agri-Dex <i>fb</i>	0.375 2.5%	2-3 LF 2-3 LF	80	94	98	98	98	80	93	97	90	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
6	Propanil <i>fb</i>	4.0	2-3 LF	68	61	87	85	92	74	63	81	80	84
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
7	Propanil + pendimethalin <i>fb</i>	1.0 1.0	2-3 LF 2-3 LF	74	88	98	98	98	78	89	96	96	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
8	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	80	86	98	98	98	80	76	96	91	91
	cyhalofop + carfentrazone + Agri-Dex	0.187 0.025 1.25%	PREFL PREFL PREFL										
9	Cyhalofop + propanil <i>fb</i>	0.187 2.0	2-3 LF 2-3 LF	84	71	98	98	98	85	69	98	96	92
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
10	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	83	86	98	98	98	81	76	98	96	98
	propanil + triclopyr	4.0 0.25	PREFL PREFL										

continued

Table 4. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control										
			Resistant (R-ECHCG)					Susceptible (S-ECHCG)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
			----- (%) -----										
11	Propanil <i>fb</i>	4.0	2-3 LF	68	55	58	40	50	68	59	60	71	64
	propanil +	4.0	PREFL										
	triclopyr	0.25	PREFL										
12	Propanil +	4.0	2-3 LF	93	95	98	98	98	93	95	98	96	98
	quinclorac	0.375	2-3 LF										
13	(Fenoxaprop +	0.045	2-3 LF	86	91	98	98	98	86	90	98	92	96
	safener) <i>fb</i>												
	(fenoxaprop +	0.045	PREFL										
	safener) +												
	triclopyr	0.25	PREFL										
14	Cyhalofop +	0.187	2-3 LF	86	90	98	98	98	84	68	98	96	98
	Agri-Dex <i>fb</i>	2.5%	2-3 LF										
	cyhalofop +	0.187	PREFL										
	triclopyr +	0.375	PREFL										
	Agri-Dex	1.25%	PREFL										
15	Clomazone <i>fb</i>	0.4	PRE	95	95	98	98	98	95	95	98	98	98
	cyhalofop +	0.187	PREFL										
	triclopyr +	0.375	PREFL										
	Agri-Dex	1.25%	PREFL										
16	Clomazone <i>fb</i>	0.4	PRE	95	95	98	98	98	95	95	98	98	98
	triclopyr +	0.375	PREFL										
	Agri-Dex	1.25%	PREFL										
17	Clomazone +	0.4	2-3 LF	84	95	98	98	98	85	95	98	98	98
	cyhalofop +	0.187	2-3 LF										
	Agri-Dex	2.5%	2-3 LF										
18	Cyhalofop +	0.187	2-3 LF	85	94	98	96	98	81	90	88	85	92
	triclopyr +	0.25	2-3 LF										
	Agri-Dex	1.25%	2-3 LF										
19	Cyhalofop +	0.187	2-3 LF	81	83	95	92	87	83	75	82	74	75
	carfentrazone +	0.025	2-3 LF										
	Agri-Dex	1.25%	2-3 LF										
20	Cyhalofop +	0.187	2-3 LF	85	70	92	76	68	88	69	74	69	63
	propanil +	4.0	2-3 LF										
	Agri-Dex	1.25%	2-3 LF										
21	Cyhalofop +	0.187	2-3 LF	86	81	92	90	89	85	74	68	65	74
	Agri-Dex	2.5%	2-3 LF										
22	Propanil <i>fb</i>	4.0	PREFL	0	0	50	81	95	0	0	53	81	88
	cyhalofop +	0.187	POFL										
	Agri-Dex	2.5%	POFL										
23	Untreated			0	0	0	0	0	0	0	0	0	0
	LSD (0.05)			8	9	8	8	9	9	11	12	7	7

continued

Table 4. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control										
			Broadleaf signalgrass (BRAPP)					Hemp sesbania (SEBEX)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
----- (%) -----													
1	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	78	70	98	98	91	0	0	74	76	86
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
2	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	78	71	98	98	98	0	0	98	98	98
	cyhalofop + triclopyr + propanil	0.187 0.25 1.0	PREFL PREFL PREFL										
3	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	89	85	98	98	98	0	0	73	80	90
	triclopyr + Agri-Dex	0.25 1.25%	PREFL PREFL										
4	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	81	91	98	98	98	0	0	79	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
5	Quinclorac + Agri-Dex <i>fb</i>	0.375 2.5%	2-3 LF 2-3 LF	86	93	98	98	98	70	89	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
6	Propanil <i>fb</i> cyhalofop + triclopyr + Agri-Dex	4.0 0.187 0.25 1.25%	2-3 LF PREFL PREFL PREFL	81	74	98	98	98	94	91	97	98	98
7	Propanil + pendimethalin <i>fb</i>	1.0 1.0	2-3 LF 2-3 LF	83	84	98	98	97	95	91	98	94	97
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
8	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	84	75	98	98	98	0	0	98	96	98
	cyhalofop + carfentrazone + Agri-Dex	0.187 0.025 1.25%	PREFL PREFL PREFL										
9	Cyhalofop + propanil <i>fb</i>	0.187 2.0	2-3 LF 2-3 LF	90	79	98	98	98	95	94	98	96	96
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
10	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	85	81	98	98	98	10	0	98	98	98
	propanil + triclopyr	4.0 0.25	PREFL PREFL										

continued

Table 4. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control										
			Broadleaf signalgrass (BRAPP)					Hemp sesbania (SEBEX)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
			----- (%) -----										
11	Propanil <i>fb</i>	4.0	2-3 LF	81	69	98	98	98	95	93	98	98	98
	propanil + triclopyr	4.0 0.25	PREFL PREFL										
12	Propanil + quinclorac	4.0 0.375	2-3 LF 2-3 LF	95	95	98	98	98	95	95	98	98	98
13	(Fenoxaprop + safener) <i>fb</i>	0.045	2-3 LF	90	93	98	98	98	10	0	75	81	88
	(fenoxaprop + safener) + triclopyr	0.045 0.25	PREFL PREFL										
14	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	88	76	98	98	98	0	0	81	96	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.375 1.25%	PREFL PREFL PREFL										
15	Clomazone <i>fb</i>	0.4	PRE	94	95	98	98	98	0	0	78	92	96
	cyhalofop + triclopyr + Agri-Dex	0.187 0.375 1.25%	PREFL PREFL PREFL										
16	Clomazone <i>fb</i>	0.4	PRE	95	95	98	98	98	0	15	71	89	93
	triclopyr + Agri-Dex	0.375 1.25%	PREFL PREFL										
17	Clomazone + cyhalofop + Agri-Dex	0.4 0.187 2.5%	2-3 LF 2-3 LF 2-3 LF	88	95	98	98	98	48	33	0	0	15
18	Cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	2-3 LF 2-3 LF 2-3 LF	79	81	98	98	98	63	71	71	70	69
19	Cyhalofop + carfentrazone + Agri-Dex	0.187 0.025 1.25%	2-3 LF 2-3 LF 2-3 LF	83	76	95	98	98	95	95	86	73	86
20	Cyhalofop + propanil + Agri-Dex	0.187 4.0 1.25%	2-3 LF 2-3 LF 2-3 LF	86	80	98	98	89	94	91	74	83	84
21	Cyhalofop + Agri-Dex	0.187 2.5%	2-3 LF 2-3 LF	89	71	94	98	82	0	0	0	0	0
22	Propanil <i>fb</i>	4.0	PREFL	0	0	98	98	98	0	0	98	98	98
	cyhalofop + Agri-Dex	0.187 2.5%	POFL POFL										
23	Untreated			0	0	0	0	0	0	0	0	0	0
LSD (0.05)				9	12	3	0	9	10	15	7	9	12

continued

Table 4. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control										
			Northern jointvetch (AESVI)					Tall morningglory (PHBPU)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
----- (%) -----													
1	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	10	0	98	98	95	0	10	89	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
2	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	0	0	98	98	98	0	0	91	98	98
	cyhalofop + triclopyr + propanil	0.187 0.25 1.0	PREFL PREFL PREFL										
3	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	23	64	98	96	98	0	30	98	98	98
	triclopyr + Agri-Dex	0.25 1.25%	PREFL PREFL										
4	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	19	63	98	98	98	0	40	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
5	Quinclorac + Agri-Dex <i>fb</i>	0.375 2.5%	2-3 LF 2-3 LF	70	95	98	98	98	66	95	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
6	Propanil <i>fb</i>	4.0	2-3 LF	94	79	98	96	96	65	43	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
7	Propanil + pendimethalin <i>fb</i>	1.0 1.0	2-3 LF 2-3 LF	94	91	98	98	98	70	68	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
8	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	23	20	98	98	77	0	20	96	98	86
	cyhalofop + carfentrazone + Agri-Dex	0.187 0.025 1.25%	PREFL PREFL PREFL										
9	Cyhalofop + propanil <i>fb</i>	0.187 2.0	2-3 LF 2-3 LF	91	50	98	98	98	40	10	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
10	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	21	0	98	98	98	0	0	98	98	98
	propanil + triclopyr	4.0 0.25	PREFL PREFL										

continued

Table 4. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control										
			Northern jointvetch (AESVI)					Tall morningglory (PHBPU)					
			6/9	6/15	6/28	7/18	8/16	6/9	6/15	6/28	7/18	8/16	
----- (%) -----													
1	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	10	0	98	98	95	0	10	89	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
2	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	0	0	98	98	98	0	0	91	98	98
	cyhalofop + triclopyr + propanil	0.187 0.25 1.0	PREFL PREFL PREFL										
3	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	23	64	98	96	98	0	30	98	98	98
	triclopyr + Agri-Dex	0.25 1.25%	PREFL PREFL										
4	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i>	0.187 1.0 2.5%	2-3 LF 2-3 LF 2-3 LF	19	63	98	98	98	0	40	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
5	Quinclorac + Agri-Dex <i>fb</i>	0.375 2.5%	2-3 LF 2-3 LF	70	95	98	98	98	66	95	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
6	Propanil <i>fb</i>	4.0	2-3 LF	94	79	98	96	96	65	43	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
7	Propanil + pendimethalin <i>fb</i>	1.0 1.0	2-3 LF 2-3 LF	94	91	98	98	98	70	68	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
8	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	23	20	98	98	77	0	20	96	98	86
	cyhalofop + carfentrazone + Agri-Dex	0.187 0.025 1.25%	PREFL PREFL PREFL										
9	Cyhalofop + propanil <i>fb</i>	0.187 2.0	2-3 LF 2-3 LF	91	50	98	98	98	40	10	98	98	98
	cyhalofop + triclopyr + Agri-Dex	0.187 0.25 1.25%	PREFL PREFL PREFL										
10	Cyhalofop + Agri-Dex <i>fb</i>	0.187 2.5%	2-3 LF 2-3 LF	21	0	98	98	98	0	0	98	98	98
	propanil + triclopyr	4.0 0.25	PREFL PREFL										

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 4. Section 4.

Herbicide	Rate (lb ai/A)	Application timing	Amazon sprangletop	Effect on rice					Yield 9/21 (lb/A)	
			(LEFPA) control	Injury						
			8/16	6/9	6/15	6/28	7/18	8/16		
				----- (%) -----						
1	Cyhalofop + Agri-Dex <i>fb</i> cyhalofop + triclopyr + Agri-Dex	0.187 2.5% 0.187 0.25 1.25%	2-3 LF 2-3 LF PREFL PREFL PREFL	94	0	0	15	0	0	8626
2	Cyhalofop + Agri-Dex <i>fb</i> cyhalofop + triclopyr + propanil	0.187 2.5% 0.187 0.25 1.0	2-3 LF 2-3 LF PREFL PREFL PREFL	98	0	0	18	0	0	9645
3	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i> triclopyr + Agri-Dex	0.187 1.0 2.5% 0.25 1.25%	2-3 LF 2-3 LF 2-3 LF PREFL PREFL	98	0	0	11	0	0	9405
4	Cyhalofop + pendimethalin + Agri-Dex <i>fb</i> cyhalofop + triclopyr + Agri-Dex	0.187 1.0 2.5% 0.187 0.25 1.25%	2-3 LF 2-3 LF 2-3 LF PREFL PREFL PREFL	98	0	0	13	0	0	9752
5	Quinclorac + Agri-Dex <i>fb</i> cyhalofop + triclopyr + Agri-Dex	0.375 2.5% 0.187 0.25 1.25%	2-3 LF 2-3 LF PREFL PREFL PREFL	73	0	0	19	0	0	9127
6	Propanil <i>fb</i> cyhalofop + triclopyr + Agri-Dex	4.0 0.187 0.25 1.25%	2-3 LF PREFL PREFL PREFL	96	0	0	26	0	0	10043
7	Propanil + pendimethalin <i>fb</i> cyhalofop + triclopyr + Agri-Dex	1.0 1.0 0.187 0.25 1.25%	2-3 LF 2-3 LF PREFL PREFL PREFL	98	0	0	16	0	0	9666
8	Cyhalofop + Agri-Dex <i>fb</i> cyhalofop + carfentrazone + Agri-Dex	0.187 2.5% 0.187 0.025 1.25%	2-3 LF 2-3 LF PREFL PREFL PREFL	98	0	0	14	0	0	8368
9	Cyhalofop + propanil <i>fb</i> cyhalofop + triclopyr + Agri-Dex	0.187 2.0 0.187 0.25 1.25%	2-3 LF 2-3 LF PREFL PREFL PREFL	98	3	0	26	0	0	8140
10	Cyhalofop + Agri-Dex <i>fb</i> propanil + triclopyr	0.187 2.5% 4.0 0.25	2-3 LF 2-3 LF PREFL PREFL	98	3	0	19	0	0	9760

continued

Table 4. Section 4. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Amazon sprangletop	Effect on rice					Yield 9/21 (lb/A)
			(LEFPA) control	Injury					
			8/16	6/9	6/15	6/28	7/18	8/16	
				----- (%) -----					
11 Propanil <i>fb</i>	4.0	2-3 LF	98	0	0	20	0	0	7916
propanil +	4.0	PREFL							
triclopyr	0.25	PREFL							
12 Propanil +	4.0	2-3 LF	98	3	3	14	3	0	8989
quinclorac	0.375	2-3 LF							
13 (Fenoxaprop +	0.045	2-3 LF	98	3	0	15	0	0	9014
safener) <i>fb</i>									
(fenoxaprop +	0.045	PREFL							
safener) +									
triclopyr	0.25	PREFL							
14 Cyhalofop +	0.187	2-3 LF	98	0	0	24	0	0	9694
Agri-Dex <i>fb</i>	2.5%	2-3 LF							
cyhalofop +	0.187	PREFL							
triclopyr +	0.375	PREFL							
Agri-Dex	1.25%	PREFL							
15 Clomazone <i>fb</i>	0.4	PRE	98	51	45	41	10	0	8442
cyhalofop +	0.187	PREFL							
triclopyr +	0.375	PREFL							
Agri-Dex	1.25%	PREFL							
16 Clomazone <i>fb</i>	0.4	PRE	98	48	31	41	11	0	8867
triclopyr +	0.375	PREFL							
Agri-Dex	1.25%	PREFL							
17 Clomazone +	0.4	2-3 LF	98	16	18	15	5	0	7455
cyhalofop +	0.187	2-3 LF							
Agri-Dex	2.5%	2-3 LF							
18 Cyhalofop +	0.187	2-3 LF	92	0	13	9	0	0	8304
triclopyr +	0.25	2-3 LF							
Agri-Dex	1.25%	2-3 LF							
19 Cyhalofop +	0.187	2-3 LF	96	4	0	5	0	0	6357
carfentrazone +	0.025	2-3 LF							
Agri-Dex	1.25%	2-3 LF							
20 Cyhalofop +	0.187	2-3 LF	92	0	0	8	0	0	5370
propanil +	4.0	2-3 LF							
Agri-Dex	1.25%	2-3 LF							
21 Cyhalofop +	0.187	2-3 LF	89	0	0	4	0	0	4790
Agri-Dex	2.5%	2-3 LF							
22 Propanil <i>fb</i>	4.0	PREFL	98	0	0	9	0	0	9085
cyhalofop +	0.187	POFL							
Agri-Dex	2.5%	POFL							
23 Untreated			0	0	0	0	0	0	1289
LSD (0.05)			7	8	11	7	6	0	1385

Table 5. Herbicide combinations with halosulfuron, Stuttgart, 2000.

SUMMARY

Clomazone (Command) was applied preemergence at 0.4 lb ai/A over the entire experimental area to control grass species. Triclopyr (Grandstand) was evaluated at 0.19 and 0.25 lb ai/A in tank mixtures with halosulfuron (Permit) at 0.12, 0.23, and 0.47 lb ai/A to evaluate control of morningglory species and hemp sesbania. These treatments were applied at the 4- to 5-leaf rice stage. Bentazon (Basagran), acifluorfen (Blazer), and bentazon + acifluorfen (Storm) at labeled rates were evaluated in combination with halosulfuron at a 5- to 6-leaf rice stage, which was a pre-flood application timing.

When halosulfuron was tank-mixed with triclopyr, regardless of rate combination, control of pitted and tall morningglory ranged from 90 to 100%. Halosulfuron applied alone at the 4- to 5- leaf timing gave little control (<32%). However, at the 5- to 6-leaf timing, 92% control of morningglory species was obtained with halosulfuron at 0.047 lb ai/A. Bentazon gave 50 to 80% control of these morningglory species when applied alone at the 5- to 6-leaf stage, with little difference observed in control when tank-mixed with halosulfuron. All programs with acifluorfen gave >90% control of both morningglory species.

When halosulfuron was used at 0.023 or 0.047 lb ai/A alone or in combination with triclopyr at the 4- to 5-leaf timing, hemp sesbania control was >80%. When bentazon and halosulfuron were tank-mixed, hemp sesbania control was less than when halosulfuron was applied alone. When halosulfuron was used in a program with acifluorfen, hemp sesbania control was 100%.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 21, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: MIDPOST = mid-postemergence; and PREFL = pre-flood.

	MIDPOST	PREFL
Application type		
Date applied	June 12, 2000	June 19, 2000
Time	7:00 pm	10:00 am
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	84 / 84	86 / 84
Relative humidity (%)	62	85
Wind (mph)	4	1
Cloud cover (%)	40	50
Soil moisture	dry	wet
Crop stage/Height	4 lf / 8"	5-6 lf / 9.5"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	26 / 3 / 18	29 / 3 / 18
Gpa / Psi	10 / 25	10 / 28
Weed species (density)	----- [# leaves/height (in.)] -----	
SEBEX (40/ft in row)	4 lf / 8-9"	7-8 lf / 10-12"
AESVI	N/A	N/A
PHBPU (18/ft in row)	3-4 lf / 4-5"	7-8 lf / 5-6"
IPOHG (10/ft in row)	3 lf / 4"	7 lf / 4-5"
CYPIR	N/A	N/A
HETLI	N/A	N/A

Table 5. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Weed control					
			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)		
			6/28	7/18	8/16	6/28	7/18	8/16
			----- (%) -----					
1 Untreated			0	0	0	0	0	0
2 Triclopyr + halosulfuron + AG-98	0.25 0.047 0.25%	MPOST MPOST MPOST	89	100	100	89	100	100
3 Triclopyr + halosulfuron + AG-98	0.25 0.023 0.25%	MPOST MPOST MPOST	90	100	100	90	100	100
4 Triclopyr + halosulfuron + AG-98	0.25 0.012 0.25%	MPOST MPOST MPOST	90	100	93	90	100	93
5 Triclopyr + halosulfuron + AG-98	0.19 0.047 0.25%	MPOST MPOST MPOST	88	100	93	88	100	93
6 Triclopyr + halosulfuron + AG-98	0.19 0.023 0.25%	MPOST MPOST MPOST	91	93	94	91	83	94
7 Triclopyr + halosulfuron + AG-98	0.19 0.012 0.25%	MPOST MPOST MPOST	96	100	100	95	100	100
8 Triclopyr + propanil + halosulfuron	0.19 2.0 0.047	MPOST MPOST MPOST	90	100	100	90	100	100
9 Triclopyr + propanil + halosulfuron	0.19 2.0 0.023	MPOST MPOST MPOST	97	100	100	97	100	100
10 Triclopyr + propanil halosulfuron	0.19 2.0 0.012	MPOST MPOST MPOST	91	100	100	90	100	100
11 Triclopyr + propanil	0.19 2.0	MPOST MPOST	93	100	100	93	100	100
12 Triclopyr + propanil	0.25 2.0	MPOST MPOST	100	100	100	100	100	100
13 Halosulfuron + AG-98	0.047 0.25%	MPOST MPOST	28	53	28	28	53	28
14 Halosulfuron + AG-98	0.023 0.25%	MPOST MPOST	35	40	33	35	40	33
15 Halosulfuron + AG-98	0.012 0.25%	MPOST MPOST	38	30	28	38	30	28
16 Bentazon + Agri-Dex	0.75 2.5%	PREFL PREFL	40	65	53	40	65	53
17 Bentazon + Agri-Dex	1.0 2.5%	PREFL PREFL	53	75	79	50	65	79
18 Halosulfuron + Agri-Dex	0.047 1.0%	PREFL PREFL	53	83	94	53	83	94
19 Halosulfuron + bentazon + Agri-Dex	0.035 0.5 1.0%	PREFL PREFL PREFL	51	73	68	48	73	68
20 Halosulfuron + bentazon + Agri-Dex	0.024 0.75 1.0%	PREFL PREFL PREFL	48	65	75	48	65	75
21 Halosulfuron + bentazon + Agri-Dex	0.035 0.75 1.0%	PREFL PREFL PREFL	40	90	56	40	90	56

continued

Table 5. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control						
			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)			
			6/28	7/18	8/16	6/28	7/18	8/16	
			----- (%) -----						
22	Halosulfuron + acifluorfen + AG-98	0.047 0.125 0.25%	PREFL PREFL PREFL	65	100	93	65	100	93
23	Halosulfuron + acifluorfen + AG-98	0.035 0.25 0.25%	PREFL PREFL PREFL	85	93	94	86	93	94
24	Halosulfuron + (acifluorfen + bentazon) + AG-98	0.047 0.75 0.25%	PREFL PREFL PREFL	90	100	100	90	100	100
25	Halosulfuron + (acifluorfen + bentazon) + AG-98	0.035 0.75 0.25%	PREFL PREFL PREFL	93	100	100	93	100	100
LSD (0.05)				18	27	24	18	29	24

continued

Table 5. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Hemp sesbania (SEBEX) control			Effect on rice			Yield 9/21 (lb/A)	
			6/28	7/18	8/16	Injury				
			6/28	7/11	7/18					
			----- (%) -----							
1	Untreated		0	0	0	0	0	0	5576	
2	Triclopyr + halosulfuron + AG-98	0.25 0.047 0.25%	MPOST MPOST MPOST	84	100	100	0	0	0	7306
3	Triclopyr + halosulfuron + AG-98	0.25 0.023 0.25%	MPOST MPOST MPOST	80	90	89	0	0	0	6737
4	Triclopyr + halosulfuron + AG-98	0.25 0.012 0.25%	MPOST MPOST MPOST	79	81	68	0	0	0	6542
5	Triclopyr + halosulfuron + AG-98	0.19 0.047 0.25%	MPOST MPOST MPOST	82	100	100	0	0	0	7339
6	Triclopyr + halosulfuron + AG-98	0.19 0.023 0.25%	MPOST MPOST MPOST	80	94	86	0	0	0	7004
7	Triclopyr + halosulfuron + AG-98	0.19 0.012 0.25%	MPOST MPOST MPOST	83	88	81	0	3	0	7174
8	Triclopyr + propanil + halosulfuron	0.19 2 0.047	MPOST MPOST MPOST	100	100	100	0	0	0	7438
9	Triclopyr + propanil + halosulfuron	0.19 2.0 0.023	MPOST MPOST MPOST	100	95	94	0	0	0	6917

continued

Table 5. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Hemp sesbania (SEBEX) control			Effect on rice			Yield 9/21 (lb/A)
			6/28	7/18	8/16	Injury			
						6/28	7/11	7/18	
			----- (%) -----						
10	Triclopyr + propanil 0.19 2.0	MPOST MPOST	100	98	94	0	0	0	7172
11	halosulfuron Triclopyr + propanil 0.012 0.19 2.0	MPOST MPOST	100	95	95	0	0	0	7187
12	Triclopyr + propanil 0.25 2.0	MPOST MPOST	100	98	93	0	0	0	6785
13	Halosulfuron + AG-98 0.047 0.25%	MPOST MPOST	74	86	81	0	0	0	6380
14	Halosulfuron + AG-98 0.023 0.25%	MPOST MPOST	69	85	79	0	0	0	7021
15	Halosulfuron + AG-98 0.012 0.25%	MPOST MPOST	46	40	23	0	0	0	5347
16	Bentazon + Agri-Dex 0.75 2.5%	PREFL PREFL	55	65	30	0	0	0	6453
17	Bentazon + Agri-Dex 1.0 2.5%	PREFL PREFL	76	68	33	0	0	0	5299
18	Halosulfuron + Agri-Dex 0.047 1.0%	PREFL PREFL	74	100	100	0	0	0	6553
19	Halosulfuron + bentazon + Agri-Dex 0.035 0.5 1.0%	PREFL PREFL PREFL	57	76	60	0	0	0	6992
20	Halosulfuron + bentazon + Agri-Dex 0.024 0.75 1.0%	PREFL PREFL PREFL	80	75	43	0	3	0	7327
21	Halosulfuron + bentazon + Agri-Dex 0.035 0.75 1.0%	PREFL PREFL PREFL	50	64	34	0	3	0	6892
22	Halosulfuron + acifluorfen + AG-98 0.047 0.125 0.25%	PREFL PREFL PREFL	95	100	100	0	3	0	7072
23	Halosulfuron + acifluorfen + AG-98 0.035 0.25 0.25%	PREFL PREFL PREFL	96	100	100	3	0	0	7348
24	Halosulfuron + (acifluorfen + bentazon) + AG-98 0.047 0.75 0.25%	PREFL PREFL PREFL	99	100	100	3	0	0	7350
25	Halosulfuron + (acifluorfen + bentazon) + AG-98 0.035 0.75 0.25%	PREFL PREFL PREFL	97	100	100	2	0	0	6060
LSD (0.05)			18	16	29	1	3	NS	1485

Table 6. Clomazone programs with carfentrazone-ethyl and recommended rice herbicides, Stuttgart, 2000.

SUMMARY

Clomazone (Command) was applied preemergence at 0.4 lb ai/A over the entire experimental area to control grass species. Carfentrazone-ethyl (Aim) was evaluated for the control of broadleaved weeds at 0.025 lb ai/A at the 2- to 3-leaf rice stage applied alone and in a sequential program. Carfentrazone was also evaluated at the 5- to 6-leaf rice stage in combination with bentazon (Basagran), acifluorfen (Blazer), bentazon + acifluorfen (Storm), quinclorac (Facet), fenoxaprop + safener (Ricestar), bispyribac-sodium (Regiment), halosulfuron (Permit), bensulfuron (Londax), triclopyr (Grandstand), propanil (Stam M-4), propanil + molinate (Arrosolo), propanil tank-mixed with thiobencarb (Bolero), and propanil tank-mixed with pendimethalin (Prowl).

Clomazone applied at 0.4 lb ai/A provided 100% control of broadleaf signalgrass and propanil-resistant and -susceptible barnyardgrass. When carfentrazone-ethyl was used in a sequential program or with other broadleaf rice herbicides, >93% control of pitted morningglory, tall morningglory, northern jointvetch, and hemp sesbania was obtained. Carfentrazone-ethyl provided excellent control of broadleaf weeds and worked well in combination with existing rice herbicides.

TEST INFORMATION

Location	Stuttgart	Planting date	May 18, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 14, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ...	Dewitt silt loam (8% sand, 75% silt, 16% clay)	Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: PRE = preemergence; EPOST = early postemergence; and PREFL = pre flood.

Application type	PRE	EPOST	PREFL
Date applied	May 18, 2000	June 2, 2000	June 19, 2000
Time	9:00 pm	1:00 pm	10:00 am
Incorporation equipment	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	95 / 92	86 / 84
Relative humidity (%)	83	42	85
Wind (mph)	3	2	1
Cloud cover (%)	20	15	50
Soil moisture	dry	adequate	wet
Crop stage/Height	N/A	2-3 lf / 5"	5-6 lf / 12"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	15 / 3 / 18	22 / 3 / 18	27 / 3 / 18
Gpa / Psi	10 / 30	10 / 28	10 / 28
Weed species (density)	----- [# leaves/height (in.)] -----		
R-ECHCG (20/ft in row)	N/A	2-3 lf / 1.5-2"	5-6 lf / 10"
S-ECHCG (15/ft in row)	N/A	2 lf / 1.5"	4-5 lf / 7-8"
BRAPP (24/ft in row)	N/A	1-2 lf / 1"	5-6 lf / 6"
IPOLA (12/ft in row)	N/A	2-3 lf / 1.5-2"	10 lf / 5-6"
PHBPU (14/ft in row)	N/A	1 lf / 1.5"	8-9 lf / 6"
AESVI (0.25/ft in row)	N/A	cot. /	5 lf / 3"
SEBEX (30/ft in row)	N/A	2-3 lf / 4-5"	7-8 lf / 9-10"

Table 6. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Barnyardgrass						Broadleaf signalgrass (BRAPP)		
			Susceptible (S-ECHCG)			Resistant (R-ECHCG)			6/16	7/18	8/17
			6/16	7/18	8/17	6/16	7/18	8/17			
			----- (%) -----								
1	Untreated check		0	0	0	0	0	0	0	0	0
2	Clomazone	0.5 PRE	100	100	100	100	100	100	100	100	100
3	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 EPOST									
	AG-98 <i>fb</i>	0.25% EPOST									
	carfentrazone +	0.025 PREFL									
	AG-98	0.25% PREFL									
4	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone	0.025 PREFL									
	AG-98	0.25% PREFL									
5	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	bentazon +	0.75 PREFL									
	AG-98	0.25% PREFL									
6	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	(acifluorfen +	0.25 PREFL									
	bentazon) +	0.25% PREFL									
	AG-98										
7	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	acifluorfen +	0.125 PREFL									
	AG-98	0.25 PREFL									
8	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	propanil	3.0 PREFL									
9	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	propanil +	3.0 PREFL									
	thiobencarb	4.0 PREFL									
10	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	propanil +	3.0 PREFL									
	pendimethalin	1.0 PREFL									
11	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	(propanil + molinate)	4.5 PREFL									
12	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	quinclorac +	0.375 PREFL									
	AG-98	0.25% PREFL									
13	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	quinclorac +	0.375 PREFL									
	Agri-Dex	1.25% PREFL									
14	Clomazone <i>fb</i>	0.5 PRE	100	100	100	100	100	100	100	100	100
	carfentrazone +	0.025 PREFL									
	(fenoxaprop +	0.045 PREFL									
	safener) +	1.25% PREFL									
	Agri-Dex										

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 6. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control									
			Barnyardgrass						Broadleaf signalgrass (BRAPP)			
			Susceptible (S-ECHCG)			Resistant (R-ECHCG)			6/16	7/18	8/17	
6/16	7/18	8/17	6/16	7/18	8/17	6/16	7/18	8/17				
										----- (%) -----		
15 Clomazone <i>fb</i>	0.5	PRE	100	100	100	100	100	100	100	100	100	100
carfentrazone +	0.025	PREFL										
bispyribac-sodium +	0.019	PREFL										
Kinetic	0.125%	PREFL										
16 Clomazone <i>fb</i>	0.5	PRE	100	100	100	100	100	100	100	100	100	100
carfentrazone +	0.025	PREFL										
halosulfuron +	0.047	PREFL										
AG-98	0.25%	PREFL										
17 Clomazone <i>fb</i>	0.5	PRE	100	100	100	100	100	100	100	100	100	100
carfentrazone +	0.025	PREFL										
bensulfuron +	0.0625	PREFL										
AG-98	0.25%	PREFL										
18 Clomazone <i>fb</i>	0.5	PRE	100	100	100	100	100	100	100	100	100	100
triclopyr +	0.38	PREFL										
AG-98	0.25%	PREFL										
19 Quinclorac <i>fb</i>	0.375	PRE	100	100	100	100	100	100	100	100	100	100
propanil +	4.0	PREFL										
triclopyr	0.25	PREFL										
20 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	100	100	100	100	100
quinclorac +	0.375	PRE										
(propanil + molinate)	4.5	PREFL										
21 Propanil +	4.0	EPOST	86	100	100	74	100	100	86	100	100	100
pendimethalin <i>fb</i>	1.0	EPOST										
propanil +	3.0	PREFL										
triclopyr	0.25	PREFL										
22 Clomazone <i>fb</i>	0.5	PRE	100	100	100	100	100	100	100	100	100	100
propanil	4.0	PREFL										
triclopyr	0.25	PREFL										
LSD (0.05)			4	0	0	6	0	0	4	0	0	0

continued

Table 6. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control									
			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)		Hemp sesbania (SEBEX)				
			6/16	7/18	8/17	6/16	7/18	6/16	7/18	8/17		
										----- (%) -----		
1 Untreated check			0	0	0	0	0	0	0	0	0	0
2 Clomazone	0.5	PRE	0	0	0	0	0	0	0	0	0	0
3 Clomazone <i>fb</i>	0.5	PRE	84	100	100	86	100	97	100	100	100	100
carfentrazone +	0.025	EPOST										
AG-98 <i>fb</i>	0.25%	EPOST										
carfentrazone +	0.025	PREFL										
AG-98	0.25%	PREFL										
4 Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100	100	100
carfentrazone	0.025	PREFL										
AG-98	0.25%	PREFL										

continued

Table 6. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)		Hemp sesbania (SEBEX)			
			6/16	7/18	8/17	6/16	7/18	6/16	7/18	8/17	
			----- (%) -----								
5	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	98
	carfentrazone +	0.025	PREFL								
	bentazon +	0.75	PREFL								
	AG-98	0.25%	PREFL								
6	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	(acifluorfen +										
	bentazon) +	0.25	PREFL								
	AG-98	0.25%	PREFL								
7	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	acifluorfen +	0.125	PREFL								
	AG-98	0.25	PREFL								
8	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	propanil	3.0	PREFL								
9	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	propanil +	3.0	PREFL								
	thiobencarb	4.0	PREFL								
10	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	propanil +	3.0	PREFL								
	pendimethalin	1.0	PREFL								
11	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	(propanil + molinate)	4.5	PREFL								
12	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	quinclorac +	0.375	PREFL								
	AG-98	0.25%	PREFL								
13	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	quinclorac +	0.375	PREFL								
	Agri-Dex	1.25%	PREFL								
14	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	(fenoxaprop +										
	safener) +	0.045	PREFL								
	Agri-Dex	1.25%	PREFL								
15	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	bispyribac-sodium +	0.019	PREFL								
	Kinetic	0.125%	PREFL								
16	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	98
	carfentrazone +	0.025	PREFL								
	halosulfuron +	0.047	PREFL								
	AG-98	0.25%	PREFL								

continued

Table 6. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)		Hemp sesbania (SEBEX)			
			6/16	7/18	8/17	6/16	7/18	6/16	7/18	8/17	
			----- (%) -----								
17	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	carfentrazone +	0.025	PREFL								
	bensulfuron +	0.0625	PREFL								
	AG-98	0.25%	PREFL								
18	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	triclopyr +	0.38	PREFL								
	AG-98	0.25%	PREFL								
19	Quinclorac <i>fb</i>	0.375	PRE	100	100	100	100	100	97	100	100
	propanil +	4.0	PREFL								
	triclopyr	0.25	PREFL								
20	Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	92	100	100
	quinclorac +	0.375	PRE								
	(propanil + molinate)	4.5	PREFL								
21	Propanil +	4.0	EPOST	59	100	100	61	100	94	100	100
	pendimethalin <i>fb</i>	1.0	EPOST								
	propanil +	3.0	PREFL								
	triclopyr	0.25	PREFL								
22	Clomazone <i>fb</i>	0.5	PRE	0	100	100	0	100	0	100	100
	propanil	4.0	PREFL								
	triclopyr	0.25	PREFL								
LSD (0.05)				4	0	0	4	0	2	0	2

continued

Table 6. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control							
			Northern jointvetch (AESVI)			Effect on rice Chlorosis				
			6/16	7/18	8/17	6/1	6/8	6/16	6/26	
			----- (%) -----							
1	Untreated check		0	0	0	0	0	0	0	
2	Clomazone	0.5	PRE	0	0	0	14	46	5	2
3	Clomazone <i>fb</i>	0.5	PRE	95	100	100	15	49	5	2
	carfentrazone +	0.025	EPOST							
	AG-98 <i>fb</i>	0.25%	EPOST							
	carfentrazone +	0.025	PREFL							
	AG-98	0.25%	PREFL							
4	Clomazone <i>fb</i>	0.5	PRE	0	100	94	14	45	5	3
	carfentrazone	0.025	PREFL							
	AG-98	0.25%	PREFL							
5	Clomazone <i>fb</i>	0.5	PRE	0	100	98	20	46	5	2
	carfentrazone +	0.025	PREFL							
	bentazon +	0.75	PREFL							
	AG-98	0.25%	PREFL							
6	Clomazone <i>fb</i>	0.5	PRE	0	100	98	9	45	5	2
	carfentrazone +	0.025	PREFL							
	(acifluorfen + bentazon) +	0.25	PREFL							
	AG-98	0.25%	PREFL							

continued

Table 6. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control							
			Northern jointvetch (AESVI)			Effect on rice Chlorosis				
			6/16	7/18	8/17	6/1	6/8	6/16	6/26	
			----- (%) -----							
7	Clomazone <i>fb</i>	0.5	PRE	0	100	100	15	49	5	2
	carfentrazone +	0.025	PREFL							
	acifluorfen +	0.125	PREFL							
	AG-98	0.25	PREFL							
8	Clomazone <i>fb</i>	0.5	PRE	0	100	100	16	51	5	2
	carfentrazone +	0.025	PREFL							
	propanil	3.0	PREFL							
9	Clomazone <i>fb</i>	0.5	PRE	0	100	100	13	46	5	2
	carfentrazone +	0.025	PREFL							
	propanil +	3.0	PREFL							
	thiobencarb	4.0	PREFL							
10	Clomazone <i>fb</i>	0.5	PRE	0	100	98	11	53	5	2
	carfentrazone +	0.025	PREFL							
	propanil +	3.0	PREFL							
	pendimethalin	1.0	PREFL							
11	Clomazone <i>fb</i>	0.5	PRE	0	100	100	12	51	5	2
	carfentrazone +	0.025	PREFL							
	(propanil + molinate)	4.5	PREFL							
12	Clomazone <i>fb</i>	0.5	PRE	0	100	100	18	50	5	2
	carfentrazone +	0.025	PREFL							
	quinclorac +	0.375	PREFL							
	AG-98	0.25%	PREFL							
13	Clomazone <i>fb</i>	0.5	PRE	0	100	98	21	54	6	2
	carfentrazone +	0.025	PREFL							
	quinclorac +	0.375	PREFL							
	Agri-Dex	1.25%	PREFL							
14	Clomazone <i>fb</i>	0.5	PRE	0	100	100	15	50	5	2
	carfentrazone +	0.025	PREFL							
	(fenoxaprop + safener) +	0.045	PREFL							
	Agri-Dex	1.25%	PREFL							
15	Clomazone <i>fb</i>	0.5	PRE	0	100	98	16	50	5	3
	carfentrazone +	0.025	PREFL							
	bispyribac-sodium +	0.019	PREFL							
	Kinetic	0.125%	PREFL							
16	Clomazone <i>fb</i>	0.5	PRE	0	100	100	13	51	5	2
	carfentrazone +	0.025	PREFL							
	halosulfuron +	0.047	PREFL							
	AG-98	0.25%	PREFL							
17	Clomazone <i>fb</i>	0.5	PRE	0	100	95	12	49	5	1
	carfentrazone +	0.025	PREFL							
	bensulfuron +	0.0625	PREFL							
	AG-98	0.25%	PREFL							
18	Clomazone <i>fb</i>	0.5	PRE	0	100	100	10	51	5	2
	triclopyr +	0.38	PREFL							
	AG-98	0.25%	PREFL							
19	Quinclorac <i>fb</i>	0.375	PRE	96	100	100	0	0	0	2
	propanil +	4.0	PREFL							
	triclopyr	0.25	PREFL							

continued

Table 6. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control				Effect on rice			
			Northern jointvetch (AESVI)			Chlorosis				
			6/16	7/18	8/17	6/1	6/8	6/16	6/26	
			----- (%) -----							
20	Clomazone <i>fb</i>	0.3	PRE	94	100	100	0	13	2	2
	quinclorac +	0.375	PRE							
	(propanil + molinate)	4.5	PREFL							
21	Propanil +	4.0	EPOST	93	100	100	0	0	0	2
	pendimethalin <i>fb</i>	1.0	EPOST							
	propanil +	3.0	PREFL							
	triclopyr	0.25	PREFL							
22	Clomazone <i>fb</i>	0.5	PRE	0	100	100	18	46	5	2
	propanil	4.0	PREFL							
	triclopyr	0.25	PREFL							
LSD (0.05)				3	0	5	7	9	1	2

continued

Table 6. Section 4.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice									
			Biomass reduction				Injury				Yield	
			6/1	6/8	6/16	6/26	6/1	6/8	6/16	6/26	9/14	
			----- (%) -----							(lb/A)		
1	Untreated Check		0	0	0	0	0	0	0	0	4366	
2	Clomazone	0.5	PRE	0	1	5	0	4	10	5	3	6982
3	Clomazone <i>fb</i>	0.5	PRE	0	1	5	0	4	13	5	11	7823
	carfentrazone +	0.025	EPOST									
	AG-98 <i>fb</i>	0.25%	EPOST									
	carfentrazone +	0.025	PREFL									
	AG-98	0.25%	PREFL									
4	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	4	10	5	9	8763
	carfentrazone	0.025	PREFL									
	AG-98	0.25%	PREFL									
5	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	3	10	5	5	7808
	carfentrazone +	0.025	PREFL									
	bentazon +	0.75	PREFL									
	AG-98	0.25%	PREFL									
6	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	3	10	5	8	8961
	carfentrazone +	0.025	PREFL									
	(acifluorfen + bentazon)	0.25	PREFL									
	+ AG-98	0.25%	PREFL									
7	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	4	10	5	9	7366
	carfentrazone +	0.025	PREFL									
	acifluorfen +	0.125	PREFL									
	AG-98	0.25	PREFL									
8	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	5	10	5	4	9158
	carfentrazone +	0.025	PREFL									
	propanil	3.0	PREFL									
9	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	3	10	5	8	7307
	carfentrazone +	0.025	PREFL									
	propanil +	3.0	PREFL									
	thiobencarb	4.0	PREFL									

continued

Table 6. Section 4. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice								Yield 9/14 (lb/A)	
			Biomass reduction				Injury					
			6/1	6/8	6/16	6/26	6/1	6/8	6/16	6/26		
			-----				-----					
			(%)									
10	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	5	10	5	6	8333
	carfentrazone +	0.025	PREFL									
	propanil +	3.0	PREFL									
	pendimethalin	1.0	PREFL									
11	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	4	10	5	6	8006
	carfentrazone +	0.025	PREFL									
	(propanil + molinate)	4.5	PREFL									
12	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	4	10	5	4	8317
	carfentrazone +	0.025	PREFL									
	quinclorac +	0.375	PREFL									
	AG-98	0.25%	PREFL									
13	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	4	10	5	4	8432
	carfentrazone +	0.025	PREFL									
	quinclorac +	0.375	PREFL									
	Agri-Dex	1.25%	PREFL									
14	Clomazone <i>fb</i>	0.5	PRE	0	1	5	0	25	10	5	5	9491
	carfentrazone +	0.025	PREFL									
	(fenoxaprop + safener) +	0.045	PREFL									
	Agri-Dex	1.25%	PREFL									
15	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	3	10	5	4	8462
	carfentrazone +	0.025	PREFL									
	bispyribac-sodium +	0.019	PREFL									
	Kinetic	0.125%	PREFL									
16	Clomazone <i>fb</i>	0.5	PRE	0	0	11	0	3	10	13	5	8835
	carfentrazone +	0.025	PREFL									
	halosulfuron +	0.047	PREFL									
	AG-98	0.25%	PREFL									
17	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	6	10	6	2	9234
	carfentrazone +	0.025	PREFL									
	bensulfuron +	0.0625	PREFL									
	AG-98	0.25%	PREFL									
18	Clomazone <i>fb</i>	0.5	PRE	0	0	5	0	1	9	5	1	9118
	triclopyr +	0.38	PREFL									
	AG-98	0.25%	PREFL									
19	Quinclorac <i>fb</i>	0.375	PRE	4	14	14	5	16	26	4	11	7892
	propanil +	4.0	PREFL									
	triclopyr	0.25	PREFL									
20	Clomazone <i>fb</i>	0.3	PRE	6	14	20	0	14	23	21	23	8054
	quinclorac +	0.375	PRE									
	(propanil + molinate)	4.5	PREFL									
21	Propanil +	4.0	EPOST	0	0	0	0	0	5	0	5	7909
	pendimethalin <i>fb</i>	1.0	EPOST									
	propanil +	3.0	PREFL									
	triclopyr	0.25	PREFL									
22	Clomazone <i>fb</i>	0.5	PRE	1	0	5	0	6	10	5	3	8862
	propanil	4.0	PREFL									
	triclopyr	0.25	PREFL									
	LSD (0.05)			5	7	13	3	16	7	11	11	1420

Table 7. Levee weed control with clomazone, Stuttgart, 2000.

SUMMARY

Clomazone (Command) was evaluated for its use in levee weed control in rice. Clomazone was applied at 0.4 lb ai/A preemergence to the experimental area prior to levee formation. Levees were then pulled three times in the same direction parallel through the center of each plot with a levee disk. After levee formation, additional clomazone was applied at 0.2 lb ai/A on two sets of plots for a total rate of clomazone to 0.6 lb ai/A for these two treatments. Other levee treatments included propanil (Stam M-4), fenoxaprop + safener (Ricestar), and bispyribac-sodium (Regiment) each applied at labeled rates at the 2- to 3-leaf and 5- to 6-leaf grass stages. Combinations of these postemergence herbicides were also evaluated

This research demonstrated that clomazone will need to be used in a program approach to obtain effective control of propanil-resistant and -susceptible barnyardgrass on the levees. Clomazone gave little residual control on the levee if applied prior to levee formation indicating the need for a postemergence program to maintain effective weed control. Only fenoxaprop + safener and clomazone applied after levee formation followed by propanil were effective for control of propanil-resistant and -susceptible barnyardgrass. Levees were formed in this experiment with a levee disk; therefore, differences in control may be observed if a levee squeezer is used instead.

TEST INFORMATION

Location	Stuttgart	Planting date	May 24, 2000
Experimental Design / replications	RCB / 4	Harvest date	N/A
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ...	Dewitt silt loam (8% sand, 75% silt, 16% clay)	Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: PRE-A = preemergence applied before levee formation; PRE-B = preemergence applied after levee formation; EPOST = early postemergence; and PREFL = pre-flood.

Application type	PRE-A	PRE-B	EPOST	PREFL
Date applied	May 18, 2000	May 25, 2000	June 19, 2000	July 5, 2000
Time	10:00 pm	12:00 pm	1:00 pm	12:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	85 / 76	93 / 84	98 / 85
Relative humidity (%)	20	76	85	90
Wind (mph)	3	3	1	2
Cloud cover (%)	20	50	50	40
Soil moisture	dry	dry	wet	dry
Crop stage/Height	N/A	N/A	2 lf / 5.5"	4-5 lf / 9"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	16 / 3 / 18	20 / 3 / 18	28 / 3 / 18
Gpa / Psi	10 / 30	10 / 30	10 / 30	10 / 30
Weed species (density)	----- [# leaves/height (in.)] -----			
R-ECHCG (3/ft ²)	N/A	N/A	1-2 lf / 2"	3-4 lf / 5-6"
S-ECHCG (10/ft ²)	N/A	N/A	2-3 lf / 3-4"	4-5 lf / 6-8"
PHYAN (1/ft ²)	N/A	N/A	7 lf / 6"5"	12-15 lf / 12-14"

Table 7. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Barnyardgrass						Cutleaf groundcherry (PHYAN)		
			Resistant (R-ECHCG)			Susceptible (S-ECHCG)			6/11	6/18	9/16
6/28	7/18	9/16	6/28	7/18							
----- (%) -----											
1 Untreated check			0	21	9	19	21	10	8	31	
Clomazone	0.4	PRE-A									
2 Clomazone <i>fb</i>	0.4	PRE-A	91	44	25	65	44	10	8	18	
clomazone (after levee)	0.2	PRE-B									
3 Clomazone <i>fb</i>	0.4	PRE-A	84	64	35	86	64	99	100	96	
propanil	4.0	EPOST									
4 Clomazone <i>fb</i>	0.4	PRE-A	0	13	26	0	13	30	73	78	
propanil	4.0	PREFL									
5 Clomazone <i>fb</i>	0.4	PRE-A	85	66	65	98	66	96	100	100	
propanil <i>fb</i>	4.0	EPOST									
popanil (if needed)	4.0	PREFL									
6 Clomazone <i>fb</i>	0.4	PRE-A	98	90	94	98	90	99	100	100	
clomazone (after levee)	0.2	PRE-B									
<i>fb</i> propanil <i>fb</i>	4.0	EPOST									
propanil (if needed)	4.0	PREFL									
7 Clomazone <i>fb</i>	0.4	PRE-A	85	98	91	76	98	10	15	0	
(fenoxaprop + safener)	0.098	EPOST									
8 Clomazone <i>fb</i>	0.4	PRE-A	86	76	79	83	76	100	100	100	
clomazone +	0.4	EPOST									
propanil	4.0	EPOST									
9 Clomazone <i>fb</i>	0.4	PRE-A	81	73	45	75	73	23	60	75	
quinclorac +	0.25	EPOST									
AG-98	0.25%	EPOST									
10 Clomazone <i>fb</i>	0.4	PRE-A	98	93	74	100	93	100	100	100	
quinclorac +	0.25	EPOST									
propanil	4.0	EPOST									
11 Clomazone <i>fb</i>	0.4	PRE-A	0	28	70	0	28	18	18	8	
bipyribac-sodium +	0.019	PREFL									
Kinetic	0.125%	PREFL									
12 Clomazone <i>fb</i>	0.4	PRE-A	0	30	59	0	30	35	70	61	
propanil +	4.0	PREFL									
bispyribac-sodium +	0.019	PREFL									
Kinetic	0.125%	PREFL									
13 Clomazone <i>fb</i>	0.4	PRE-A	0	23	44	0	23	46	74	100	
propanil +	4.0	PREFL									
triclopyr	0.25	PREFL									
LSD (0.05)			14	25	30	27	25	13	20	31	

continued

Table 7. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice								
			Chlorosis			Biomass reduction			Injury		
			6/16	6/28	7/11	6/16	6/28	7/11	6/16	6/28	7/11
			----- (%) -----								
1 Untreated check			0	3	0	0	0	0	0	0	0
Clomazone	0.4	PRE-A									
2 Clomazone <i>fb</i>	0.4	PRE-A	2	1	0	0	3	0	0	5	0
clomazone (after levee)	0.2	PRE-B									
3 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	1	0	0	6	0
propanil	4.0	EPOST									
4 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	0	0	0	0	0
propanil	4.0	PREFL									
5 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	5	0	0	9	0
propanil <i>fb</i>	4.0	EPOST									
popanil (if needed)	4.0	PREFL									
6 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	4	0	0	13	0
clomazone (after levee)	0.2	PRE-B									
<i>fb</i> propanil <i>fb</i>	4.0	EPOST									
propanil (if needed)	4.0	PREFL									
7 Clomazone <i>fb</i>	0.4	PRE-A	0	1	0	0	5	0	0	10	0
(fenoxaprop + safener)	0.098	EPOST									
8 Clomazone <i>fb</i>	0.4	PRE-A	0	1	0	0	1	0	0	4	0
clomazone +	0.4	EPOST									
propanil	4.0	EPOST									
9 Clomazone <i>fb</i>	0.4	PRE-A	0	2	0	0	4	0	0	10	0
quinclorac +	0.25	EPOST									
AG-98	0.25%	EPOST									
10 Clomazone <i>fb</i>	0.4	PRE-A	0	1	0	0	1	0	0	5	0
quinclorac +	0.25	EPOST									
propanil	4.0	EPOST									
11 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	0	0	0	0	0
bipyribac-sodium +	0.019	PREFL									
Kinetic	0.125%	PREFL									
12 Clomazone <i>fb</i>	0.4	PRE-A	0	0	0	0	0	0	0	0	0
propanil +	4.0	PREFL									
bispyribac-sodium +	0.019	PREFL									
Kinetic	0.125%	PREFL									
13 Clomazone <i>fb</i>	0.4	PRE-A	0	1	0	0	0	0	0	0	0
propanil +	4.0	PREFL									
triclopyr	0.25	PREFL									
LSD (0.05)			1	3	0	0	5	0	0	9	0

Table 8. Herbicide programs for reduced-tillage production in non-herbicide-tolerant and herbicide-tolerant rice, Stuttgart, 2000.

SUMMARY

This experiment evaluated burndown programs that could be used with conventional rice cultivars and herbicide-tolerant rice cultivars in a reduced-tillage production system. Weed species were planted perpendicular to the plots four weeks prior to burndown applications. Three rice cultivars were used in this experiment, with Wells being used in burndown programs using glyphosate and paraquat; Clearfield 3291 used with imazethapyr programs; and Liberty-tolerant Bengal used with glufosinate programs.

Clomazone (Command) at 0.3, 0.4, 0.6, or 0.8 lb ai/A was tank-mixed with glyphosate (Roundup Ultra) at 1.0 lb ai/A and paraquat (Gramoxone) at 0.63 lb ai/A and evaluated for burndown control and residual grass activity. Burndown treatments were applied 14 days prior to planting. These treatments were followed by propanil (Stam M-4) at the 2- to 3-leaf rice stage. Imazethapyr at 0.063 lb ai/A + glyphosate at 0.75 lb ai/A was also evaluated for burndown control and residual grass activity. An in-season application of propanil (Stam M-4) was applied at the 2- to 3-leaf rice stage for hemp sesbania and northern jointvetch control. Glufosinate at 0.31 lb ai/A was also tank-mixed with clomazone at 0.3, 0.4, 0.6, or 0.8 lb ai/A and evaluated for burndown control and residual grass activity. Glufosinate was also applied at 0.31 lb/A at the 2- to 3-leaf rice stage.

In this reduced-tillage system, all burndown programs were effective for the control of existing winter and early spring vegetation. Chlorosis was minimal with all combinations of clomazone at rates from 0.2 to 0.8 lb ai/A regardless of the burndown herbicide tank-mixed with clomazone. Generally 0.6 or 0.8 lb/A of clomazone was needed for season-long control of propanil-resistant and -susceptible barnyardgrass. Imazethapyr gave >80% control of propanil-resistant and -susceptible barnyardgrass. Broadleaf signalgrass control was exceptional for all treatments containing clomazone or imazethapyr. All programs controlled northern jointvetch and hemp sesbania.

TEST INFORMATION

Location	Stuttgart	Planting date	June 9, 2000
Experimental Design / replications	RCB / 4	Harvest date	N/A
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells, Bengal, and Clearfield
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	July 8 and 15, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	July 18, 2000
% OM / pH	0.94 / 5.2		

Comments: 14-DPP = 14 days preplant; 7-DPP = 7 days preplant; and EPOST = early postemergence.

Application type	14-DPP	7-DPP	EPOST
Date applied	May 25, 2000	June 6, 2000	June 28, 2000
Time	10:30 am	7:00 pm	8:00 am
Incorporation equipment	N/A	N/A	N/A
Air/Soil temperature (F)	76 / 75	78 / 78	72 / 75
Relative humidity (%)	84	40	90
Wind (mph)	3	2	3
Cloud cover (%)	100	0	50
Soil moisture	moist	moist	moist
Crop stage/Height	N/A	N/A	2-3 lf / 5"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DF / 80015	T-Jet DF / 110015	T-Jet DF / 110015
Boom ht / # Noz / Spacing (in.)	29 / 3 / 18	25 / 3 / 18	30 / 3 / 18
Gpa / Psi	15 / 40	15 / 38	15 / 38
Weed species (density)	----- [# leaves/height (in.)] -----		
S-ECHCG (15/ft)	2-3 lf / 3-4"	5-6 lf / 6-7"	10 lf / 12"
R-ECHCG (20/ft)	2-3 lf / 3-4"	5-6 lf / 6-7"	10 lf / 12"
ORYSA (4/ft)	2 lf / 4"	4 lf / 7"	6-8 lf / 12-14"
SEBEX (12/ft)	3 lf / 3"	4 lf / 5"	12 lf / 10-12"
AESVI (3-4/ft)	3 lf / 2-3"	5 lf / 3-4"	8-10 lf / 4-6"
IPOLA (8/ft)	3-4 lf / 3-4"	7 lf / 5-6"	25+ lf / 8-9"
ERICA (0.25/ft ²)	100+ lf / 13-15"	N/A	N/A
BRAPP (5/ft ²)	5-6 lf / 4-5"	5-6 lf / 4-5"	19 lf / 8-10"

Table 8. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control							
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)			
			6/9	6/29	7/11	8/17	6/9	6/29	7/11	8/17
			----- (%) -----							
1		Untreated Wells	0	0	0	0	0	0	0	0
2		Untreated Liberty Bengal	0	0	0	0	0	0	0	0
3		Untreated Clearfield	5	0	0	0	5	0	0	0
4	1.0	Glyphosate <i>fb</i>	100	98	97	66	100	93	91	66
	3.0	propanil								
5	0.31	Glufosinate <i>fb</i>	77	25	36	0	73	10	5	0
	3.0	propanil								
6	0.625	Paraquat +	79	59	60	15	79	59	25	15
	0.25	AG-98 <i>fb</i>								
	3.0	propanil								
7	0.813	(Imazethapyr +	99	100	100	98	99	100	100	96
	3.0	glyphosate) <i>fb</i>								
	3.0	propanil								
8	1.0	Glyphosate +	100	100	93	63	100	100	85	63
	0.3	clomazone <i>fb</i>								
	3.0	propanil								
9	0.31	Glufosinate +	83	78	89	39	83	15	75	39
	0.3	clomazone <i>fb</i>								
	0.31	glufosinate								
10	0.625	Paraquat +	76	90	93	13	76	70	38	13
	0.3	clomazone +								
	0.25	AG-98 <i>fb</i>								
	3.0	propanil								
11	0.813	(Imazethapyr +	100	100	99	81	100	100	99	81
	1.0	glyphosate)								
12	1.0	Glyphosate +	100	99	100	76	100	99	98	76
	0.4	clomazone <i>fb</i>								
	3.0	propanil								
13	0.31	Glufosinate +	89	58	92	53	83	38	80	53
	0.4	clomazone <i>fb</i>								
	0.31	glufosinate								
14	0.625	Paraquat +	70	84	88	20	68	70	45	20
	0.4	clomazone +								
	0.25	AG-98 <i>fb</i>								
	3.0	propanil								
15	0.813	(Imazethapyr +	100	100	100	80	100	100	98	83
	1.0	glyphosate)								
16	1.0	Glyphosate +	100	98	100	88	100	98	100	88
	0.6	clomazone <i>fb</i>								
	3.0	propanil								
17	0.31	Glufosinate +	91	91	90	56	87	64	63	56
	0.6	clomazone <i>fb</i>								
	0.31	glufosinate								
18	0.625	Paraquat +	81	91	90	63	79	90	85	63
	0.6	clomazone +								
	0.25	AG-98 <i>fb</i>								
	3.0	propanil								
19	0.813	(Imazethapyr +	94	100	100	89	94	100	100	89
	3.0	glyphosate) <i>fb</i>								
	3.0	propanil								
20	1.0	Glyphosate +	100	100	100	91	100	100	100	91
	0.8	clomazone <i>fb</i>								
	3.0	propanil								

continued

Table 8. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)				
			6/9	6/29	7/11	8/17	6/9	6/29	7/11	8/17	
			----- (%) -----								
21	Glufosinate + clomazone <i>fb</i>	0.31	14-DPP	100	94	100	96	100	94	100	96
	glufosinate	0.8	14-DPP								
		0.31	EPOST								
22	Paraquat + clomazone + AG-98 <i>fb</i>	0.625	7-DPP	65	95	98	50	65	83	83	50
	propanil	0.8	7-DPP								
		0.25	7-DPP								
		3.0	EPOST								
23	(Imazethapyr + glyphosate) <i>fb</i>	0.813	14-DPP	100	99	100	93	100	100	100	93
	propanil	3.0	EPOST								
LSD (0.05)				15	14	17	29	16	22	25	29

continued

Table 8. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Broadleaf signalgrass (BRAPP)				Pitted morningglory (IPOLA)			
			6/9	6/29	7/11	8/17	6/9	6/29	7/11	
			----- (%) -----							
1	Untreated Wells		0	0	0	0	0	0	0	
2	Untreated Liberty Bengal		0	0	0	0	0	0	0	
3	Untreated Clearfield		3	23	0	0	0	0	0	
4	Glyphosate <i>fb</i>	1.0	14-DPP	100	35	80	83	85	76	90
	propanil	3.0	EPOST							
5	Glufosinate <i>fb</i>	0.31	14-DPP	77	30	49	68	93	59	99
	propanil	3.0	EPOST							
6	Paraquat + AG-98 <i>fb</i>	0.625	7-DPP	79	79	96	90	98	94	100
	propanil	0.25	7-DPP							
		3.0	EPOST							
7	(Imazethapyr + glyphosate) <i>fb</i>	0.813	14-DPP	99	100	100	100	75	90	93
	propanil	3.0	EPOST							
8	Glyphosate + clomazone <i>fb</i>	1.0	14-DPP	100	89	98	100	89	78	95
	propanil	0.3	14-DPP							
		3.0	EPOST							
9	Glufosinate + clomazone <i>fb</i>	0.31	14-DPP	81	56	90	93	86	63	100
	glufosinate	0.3	14-DPP							
		0.31	EPOST							
10	Paraquat + clomazone + AG-98 <i>fb</i>	0.625	7-DPP	78	84	98	100	94	94	97
	propanil	0.3	7-DPP							
		0.25	7-DPP							
		3.0	EPOST							
11	(Imazethapyr + glyphosate)	0.813	14-DPP	100	86	93	78	85	73	80
12	Glyphosate + clomazone <i>fb</i>	1.0	14-DPP	100	91	100	99	83	66	83
	propanil	0.4	14-DPP							
		3.0	EPOST							
13	Glufosinate + clomazone <i>fb</i>	0.31	14-DPP	89	78	99	100	93	73	100
	glufosinate	0.4	14-DPP							
		0.31	EPOST							

continued

Table 8. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Broadleaf signalgrass (BRAPP)				Pitted morningglory (IPOLA)		
			6/9	6/29	7/11	8/17	6/9	6/29	7/11
14 Paraquat + clomazone + AG-98 fb propanil	0.625 0.4 0.25 3.0	7-DPP 7-DPP 7-DPP EPOST	65	95	95	95	78	98	99
15 (Imazethapyr + glyphosate)	0.813	14-DPP	100	100	100	100	86	98	90
16 Glyphosate + clomazone fb propanil	1.0 0.6 3.0	14-DPP 14-DPP EPOST	100	96	100	100	86	85	86
17 Glufosinate + clomazone fb glufosinate	0.31 0.6 0.31	14-DPP 14-DPP EPOST	89	81	95	90	85	84	100
18 Paraquat + clomazone + AG-98 fb propanil	0.625 0.6 0.25 3.0	7-DPP 7-DPP 7-DPP EPOST	76	91	100	100	94	100	99
19 (Imazethapyr + glyphosate) fb propanil	0.813 3.0	14-DPP EPOST	96	93	100	100	74	93	93
20 Glyphosate + clomazone fb propanil	1.0 0.8 3.0	14-DPP 14-DPP EPOST	100	100	100	100	83	81	83
21 Glufosinate + clomazone fb glufosinate	0.31 0.8 0.31	14-DPP 14-DPP EPOST	95	96	100	100	100	89	100
22 Paraquat + clomazone + AG-98 fb propanil	0.625 0.8 0.25 3.0	7-DPP 7-DPP 7-DPP EPOST	65	94	98	100	93	99	99
23 (Imazethapyr + glyphosate) fb propanil	0.813 3.0	14-DPP EPOST	100	93	98	94	78	85	95
LSD			14	27	16	25	18	31	13

continued

Table 8. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Northern jointvetch (AESVI)				Hemp sesbania (SEBEX)			
			6/9	6/29	7/11	8/17	6/9	6/29	7/11	8/17
1 Untreated Wells			0	0	0	0	0	0	0	0
2 Untreated Liberty Bengal			0	0	0	0	0	0	0	0
3 Untreated Clearfield			3	0	0	0	0	0	0	0
4 Glyphosate fb propanil	1.0 3.0	14-DPP EPOST	94	89	100	100	95	78	100	95
5 Glufosinate fb propanil	0.31 3.0	14-DPP EPOST	95	65	100	75	99	68	100	75
6 Paraquat + AG-98 fb propanil	0.625 0.25 3.0	7-DPP 7-DPP EPOST	100	89	100	100	100	91	100	99
7 (Imazethapyr + glyphosate) fb propanil	0.813 3.0	14-DPP EPOST	93	90	100	100	90	99	100	100

continued

Table 8. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Northern jointvetch (AESVI)				Hemp sesbania (SEBEX)			
			6/9	6/29	7/11	8/17	6/9	6/29	7/11	8/17
			----- (%) -----							
8	1.0	14-DPP	98	75	100	96	94	75	100	100
	0.3	14-DPP								
	3.0	EPOST								
9	0.31	14-DPP	100	79	100	98	99	83	100	96
	0.3	14-DPP								
	0.31	EPOST								
10	0.625	7-DPP	100	98	100	98	100	98	100	98
	0.3	7-DPP								
	0.25	7-DPP								
	3.0	EPOST								
11 (Imazethapyr + glyphosate)	0.813	14-DPP	92	70	85	83	79	69	88	85
12	1.0	14-DPP	86	88	100	98	80	90	100	100
	0.4	14-DPP								
	3.0	EPOST								
13	0.31	14-DPP	98	78	100	100	99	85	100	100
	0.4	14-DPP								
	0.31	EPOST								
14	0.625	7-DPP	100	98	100	100	100	98	100	100
	0.4	7-DPP								
	0.25	7-DPP								
	3.0	EPOST								
15 (Imazethapyr + glyphosate)	0.813	14-DPP	86	93	94	88	87	93	95	96
16	1.0	14-DPP	96	94	100	99	94	96	100	99
	0.6	14-DPP								
	3.0	EPOST								
17	0.31	14-DPP	99	94	100	100	100	89	100	99
	0.6	14-DPP								
	0.31	EPOST								
18	0.625	7-DPP	100	97	100	100	100	99	100	100
	0.6	7-DPP								
	0.25	7-DPP								
	3.0	EPOST								
19 (Imazethapyr + glyphosate) fb propanil	0.813	14-DPP	90	88	100	98	77	88	100	97
	3.0	EPOST								
20	1.0	14-DPP	93	91	100	100	87	89	100	99
	0.8	14-DPP								
	3.0	EPOST								
21	0.31	14-DPP	100	90	100	100	100	93	100	96
	0.8	14-DPP								
	0.31	EPOST								
22	0.625	7-DPP	100	100	100	100	100	100	100	100
	0.8	7-DPP								
	0.25	7-DPP								
	3.0	EPOST								
23 (Imazethapyr + glyphosate) fb propanil	0.813	14-DPP	93	65	100	95	84	65	100	98
	3.0	EPOST								
LSD (0.05)			8	35	9	17	13	36	8	18

Table 9. Propanil and bispyribac-sodium herbicide programs, Stuttgart, 2000.

SUMMARY

The use of propanil (Stam M-4) or bispyribac-sodium (Regiment) following clomazone (Command) or thiobencarb (Bolero) was evaluated. Propanil and bispyribac-sodium were applied at 2- to 3-leaf, 4- to 5-leaf, 5- to 6-leaf rice stages, or the postflood application timing. Propanil tank-mixed with clomazone at 0.3 lb ai/A, pendimethalin (Prowl) at 1.0 lb ai/A, and quinclorac (Facet) at 0.25 lb ai/A applied at the 4- to 5-leaf rice stage were evaluated. Standard programs included a total postemergence program of quinclorac (Facet) plus propanil applied at the 4- to 5-leaf rice stage or clomazone + quinclorac applied preemergence followed by propanil + triclopyr (Grandstand) at the 5- to 6-leaf rice stage.

Programs with clomazone or thiobencarb applied preemergence generally gave better control of propanil-resistant and -susceptible barnyardgrass than total postemergence programs. When propanil or bispyribac-sodium was applied with clomazone or quinclorac, broadleaf signalgrass control was obtained. Only those programs including quinclorac controlled pitted or tall morningglory. Northern jointvetch and hemp sesbania were controlled only with programs that included propanil, quinclorac, or bispyribac-sodium.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 21, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; MPOST = midpostemergence; PREFL = pre-flood; and POFL = post-flood.

Application type	PRE	DPRE	EPOST	MPOST	PREFL	POFL
Date applied	May 18, 2000	May 22, 2000	June 2, 2000	June 12, 2000	June 19, 2000	July 5, 2000
Time	10:00 am	4:30 pm	2:30 pm	7:00 pm	10:00 am	2:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	88 / 77	95 / 92	84 / 84	93 / 84	95 / 88
Relative humidity (%)	83	84	42	62	85	89
Wind (mph)	3	4	2	3	1	2
Cloud cover (%)	20	100	15	40	50	30
Soil moisture	adequate	adequate	adequate	adequate	adequate	flood
Crop stage/Height	N/A	N/A	2-3 lf / 5.5"	4 lf / 8"	5-6 lf / 10"	7-8 lf / 18"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 2
Nozzle type/Size	T-Jet DG / 110015	T-Jet / DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet XR / 11002
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	16 / 3 / 18	20 / 3 / 18	25 / 3 / 18	29 / 3 / 18	34 / 3 / 18
Gpa / Psi	15 / 38	15 / 38	15 / 36	15 / 38	15 / 38	15 / 24
Weed species (density)	----- [# leaves/height (in.)] -----					
S-ECHCG (13/ft in row)	N/A	N/A	1 lf / 1-2"	3-4 lf / 2-3"	5 lf / 8-10"	7-8 lf / 13-15"
R-ECHCG (15/ft in row)	N/A	N/A	1-2 lf / 2"	4 lf / 4-5"	5-6 lf / 9-10"	9-10 lf / 14-16"
BRAPP (20/ft in row)	N/A	N/A	1 lf / 1-1.5"	4-5 lf / 3-3.5"	9-10 lf / 4-5"	16-19 lf / 8-9"
IPOLA (20/ft in row)	N/A	N/A	2 lf / 2-2.5"	5-6 lf / 5"	7-8 lf / 6-7"	15+ lf / 10-12"
PHBPU (15/ft in row)	N/A	N/A	2 lf / 1-2"	3-4 lf / 2-3"	6-8 lf / 5-6"	10-14 lf / 10-12"
AESVI (10/ft in row)	N/A	N/A	1-2 lf / 2-2.5"	4-5 lf / 3.5-4"	7-8 lf / 5"	10-12 lf / 9-11"
SEBEX (40/ft in row)	N/A	N/A	2-3 lf / 3-4"	5 lf / 8-9"	8 lf / 10-12"	11-13 lf / 15-18"
N-ECHCG (8-10/ft ²)	N/A	N/A	2-3 lf / 2-2.5"	4-5 lf / 5-6"	5-6 lf / 9-10"	9-10 lf / 14-16"

Table 9. Section 1.

Herbicide	Rate	Application timing (lb ai/A)	Barnyardgrass control							
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)			
			6/1	6/16	7/18	8/17	6/1	6/16	7/18	8/17
			----- (%) -----							
1 Untreated check			0	0	0	0	0	0	0	0
2 Clomazone	0.3	PRE	100	100	100	100	98	100	100	100
3 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	99	100	100	100
propanil	4.0	MPOST								
4 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	99	100	100	100
propanil +	4.0	MPOST								
quinclorac	0.25	MPOST								
5 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	100	100	100
propanil +	4.0	MPOST								
pendimethalin	1.0	MPOST								
6 Propanil	4.0	EPOST	0	46	39	51	0	34	15	43
7 Propanil	4.0	MPOST	0	5	15	34	0	8	15	30
8 Propanil <i>fb</i>	4.0	EPOST	0	76	33	48	0	40	24	48
propanil	4.0	MPOST								
9 Propanil +	4.0	MPOST	0	49	28	58	0	19	28	53
quinclorac	0.25	MPOST								
10 Propanil +	4.0	MPOST	0	31	23	55	0	8	5	48
pendimethalin	1.0	MPOST								
11 Propanil +	4.0	MPOST	0	36	28	55	0	9	23	58
clomazone	0.3	MPOST								
12 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	100	100	100
bispyribac-sodium +	0.019	MPOST								
Kinetic	0.125%	MPOST								
13 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	98	100	100	100
bispyribac-sodium +	0.019	PREFL								
Kinetic	0.125%	PREFL								
14 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	99	100	100	100
bispyribac-sodium +	0.019	POFL								
Kinetic	0.125%	POFL								
15 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	100	100	100
(propanil + molinate)	4.5	MPOST								
16 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	100	100	100	100
(propanil + molinate)	4.5	PREFL								
17 Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	99	100	100	98
molinate +	3.0	POFL								
bensulfuron	0.0375	POFL								
18 Thiobencarb <i>fb</i>	3.0	DPRE	99	100	78	73	96	100	55	86
bispyribac-sodium +	0.019	MPOST								
Kinetic	0.125%	MPOST								
19 Thiobencarb <i>fb</i>	3.0	DPRE	100	96	100	98	100	98	100	95
bispyribac-sodium +	0.019	PREFL								
Kinetic	0.125%	PREFL								
20 Thiobencarb <i>fb</i>	3.0	DPRE	100	90	100	100	99	95	100	100
bispyribac-sodium +	0.019	POFL								
Kinetic	0.125%	POFL								
21 Clomazone +	0.3	PRE	100	100	100	100	100	100	100	100
quinclorac <i>fb</i>	0.25	PRE								
propanil +	2.0	PREFL								
triclopyr	0.25	PREFL								
LSD (0.05)			1	14	10	7	3	14	10	8

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 9. Section 2.

Herbicide	Rate	Application timing (lb ai/A)	Weed control								
			Natural barnyardgrass (N-ECHCG)			Broadleaf signalgrass (BRAPP)				Tall morningglory (PHBPU)	
			6/1	6/16	7/18	6/1	6/16	7/18	8/17	6/16	7/18
			----- (%) -----								
1	Untreated check		0	0	0	0	0	0	0	0	0
2	Clomazone	0.3 PRE	100	100	100	89	100	100	100	0	25
3	Clomazone <i>fb</i>	0.3 PRE	100	100	100	88	100	100	100	28	18
	propanil	4.0 MPOST									
4	Clomazone <i>fb</i>	0.3 PRE	100	100	100	90	100	100	100	71	100
	propanil +	4.0 MPOST									
	quinclorac	0.25 MPOST									
5	Clomazone <i>fb</i>	0.3 PRE	100	100	100	89	100	100	100	38	48
	propanil +	4.0 MPOST									
	pendimethalin	1.0 MPOST									
6	Propanil	4.0 EPOST	46	23	51	0	86	89	100	35	15
7	Propanil	4.0 MPOST	33	10	34	1	1	66	100	23	10
8	Propanil <i>fb</i>	4.0 EPOST	43	28	48	0	90	88	100	44	13
	propanil	4.0 MPOST									
9	Propanil +	4.0 MPOST	38	33	58	0	9	78	78	74	99
	quinclorac	0.25 MPOST									
10	Propanil +	4.0 MPOST	43	45	55	0	18	78	74	50	10
	pendimethalin	1.0 MPOST									
11	Propanil +	4.0 MPOST	50	23	55	0	19	73	83	21	10
	clomazone	0.3 MPOST									
12	Clomazone <i>fb</i>	0.3 PRE	100	100	100	91	100	100	100	21	13
	bispyribac-sodium +	0.019 MPOST									
	Kinetic	0.125% MPOST									
13	Clomazone <i>fb</i>	0.3 PRE	100	100	100	90	100	99	100	3	30
	bispyribac-sodium +	0.019 PREFL									
	Kinetic	0.125% PREFL									
14	Clomazone <i>fb</i>	0.3 PRE	100	100	100	88	100	100	100	3	25
	bispyribac-sodium +	0.019 POFL									
	Kinetic	0.125% POFL									
15	Clomazone <i>fb</i>	0.3 PRE	100	100	100	91	100	100	100	20	13
	(propanil + molinate)	4.5 MPOST									
16	Clomazone <i>fb</i>	0.3 PRE	100	100	100	90	100	100	100	18	20
	(propanil + molinate)	4.5 PREFL									
17	Clomazone <i>fb</i>	0.3 PRE	100	100	100	86	100	98	100	3	45
	molinate +	3.0 POFL									
	bensulfuron	0.0375 POFL									
18	Thiobencarb <i>fb</i>	3.0 DPRE	70	53	73	89	14	28	10	3	10
	bispyribac-sodium +	0.019 MPOST									
	Kinetic	0.125% MPOST									
19	Thiobencarb <i>fb</i>	3.0 DPRE	100	100	98	8	0	15	10	15	25
	bispyribac-sodium +	0.019 PREFL									
	Kinetic	0.125% PREFL									
20	Thiobencarb <i>fb</i>	3.0 DPRE	50	100	100	1	0	8	0	0	20
	bispyribac-sodium +	0.019 POFL									
	Kinetic	0.125% POFL									
21	Clomazone +	0.3 PRE	100	100	100	89	100	100	100	1	100
	quinclorac <i>fb</i>	0.25 PRE									
	propanil +	2.0 PREFL									
	triclopyr	0.25 PREFL									
LSD (0.05)			18	10	7	6	5	13	12	24	13

continued

Table 9. Section 3.

Herbicide	Rate	Application timing (lb ai/A)	Weed control					
			Pitted morningglory (IPOLA)			Northern jointvetch (AESVI)		
			6/16	7/18	8/17	6/16	7/18	8/17
			----- (%) -----					
1	Untreated check		0	0	0	0	0	0
2	Clomazone	0.3 PRE	0	23	0	0	10	0
3	Clomazone <i>fb</i>	0.3 PRE	10	18	0	90	38	45
	propanil	4.0 MPOST						
4	Clomazone <i>fb</i>	0.3 PRE	69	100	100	91	100	98
	propanil +	4.0 MPOST						
	quinclorac	0.25 MPOST						
5	Clomazone <i>fb</i>	0.3 PRE	31	49	60	85	82	78
	propanil +	4.0 MPOST						
	pendimethalin	1.0 MPOST						
6	Propanil	4.0 EPOST	10	19	39	86	64	76
7	Propanil	4.0 MPOST	18	10	25	54	68	90
8	Propanil <i>fb</i>	4.0 EPOST	34	15	40	91	92	95
	propanil	4.0 MPOST						
9	Propanil +	4.0 MPOST	69	98	100	73	95	96
	quinclorac	0.25 MPOST						
10	Propanil +	4.0 MPOST	10	10	0	69	79	73
	pendimethalin	1.0 MPOST						
11	Propanil +	4.0 MPOST	14	10	0	74	96	96
	clomazone	0.3 MPOST						
12	Clomazone <i>fb</i>	0.3 PRE	13	10	10	46	85	88
	bispyribac-sodium +	0.019 MPOST						
	Kinetic	0.125% MPOST						
13	Clomazone <i>fb</i>	0.3 PRE	1	33	28	0	91	95
	bispyribac-sodium +	0.019 PREFL						
	Kinetic	0.125% PREFL						
14	Clomazone <i>fb</i>	0.3 PRE	3	25	53	0	90	100
	bispyribac-sodium +	0.019 POFL						
	Kinetic	0.125% POFL						
15	Clomazone <i>fb</i>	0.3 PRE	13	13	13	85	82	84
	(propanil + molinate)	4.5 MPOST						
16	Clomazone <i>fb</i>	0.3 PRE	0	20	23	0	96	100
	(propanil + molinate)	4.5 PREFL						
17	Clomazone <i>fb</i>	0.3 PRE	5	80	98	0	43	73
	molinate +	3.0 POFL						
	bensulfuron	0.0375 POFL						
18	Thiobencarb <i>fb</i>	3.0 DPRE	3	10	8	0	48	43
	bispyribac-sodium +	0.019 MPOST						
	Kinetic	0.125% MPOST						
19	Thiobencarb <i>fb</i>	3.0 DPRE	0	25	18	0	94	98
	bispyribac-sodium +	0.019 PREFL						
	Kinetic	0.125% PREFL						
20	Thiobencarb <i>fb</i>	3.0 DPRE	0	20	0	0	65	94
	bispyribac-sodium +	0.019 POFL						
	Kinetic	0.125% POFL						
21	Clomazone +	0.3 PRE	0	100	100	0	100	100
	quinclorac <i>fb</i>	0.25 PRE						
	propanil +	2.0 PREFL						
	triclopyr	0.25 PREFL						
LSD (0.05)			14	15	17	15	19	22

continued

Table 9. Section 4.

Herbicide	Rate	Application timing (lb ai/A)	Weed control			Effect on rice		
			Hemp sesbania (SEBEX)			Chlorosis		
			6/16	7/18	8/17	6/1	6/5	6/29
			----- (%) -----					
1 Untreated check			0	0	0	0	0	0
2 Clomazone	0.3	PRE	0	10	0	9	11	0
3 Clomazone <i>fb</i>	0.3	PRE	76	91	98	8	10	0
propanil	4.0	MPOST						
4 Clomazone <i>fb</i>	0.3	PRE	85	100	100	9	7	0
propanil +	4.0	MPOST						
quinclorac	0.25	MPOST						
5 Clomazone <i>fb</i>	0.3	PRE	85	87	93	9	4	0
propanil +	4.0	MPOST						
pendimethalin	1.0	MPOST						
6 Propanil	4.0	EPOST	100	90	93	0	0	0
7 Propanil	4.0	MPOST	64	85	95	0	0	0
8 Propanil <i>fb</i>	4.0	EPOST	100	90	90	0	0	0
propanil	4.0	MPOST						
9 Propanil +	4.0	MPOST	79	99	100	0	0	0
quinclorac	0.25	MPOST						
10 Propanil +	4.0	MPOST	71	90	96	0	0	0
pendimethalin	1.0	MPOST						
11 Propanil +	4.0	MPOST	66	96	100	0	0	0
clomazone	0.3	MPOST						
12 Clomazone <i>fb</i>	0.3	PRE	13	64	88	5	7	0
bispyribac-sodium +	0.019	MPOST						
Kinetic	0.125%	MPOST						
13 Clomazone <i>fb</i>	0.3	PRE	0	84	95	4	3	0
bispyribac-sodium +	0.019	PREFL						
Kinetic	0.125%	PREFL						
14 Clomazone <i>fb</i>	0.3	PRE	0	50	76	8	5	0
bispyribac-sodium +	0.019	POFL						
Kinetic	0.125%	POFL						
15 Clomazone <i>fb</i>	0.3	PRE	81	76	81	4	6	0
(propanil + molinate)	4.5	MPOST						
16 Clomazone <i>fb</i>	0.3	PRE	0	97	100	8	4	0
(propanil + molinate)	4.5	PREFL						
17 Clomazone <i>fb</i>	0.3	PRE	0	45	46	5	3	0
molinate +	3.0	POFL						
bensulfuron	0.0375	POFL						
18 Thiobencarb <i>fb</i>	3.0	DPRE	23	55	66	0	0	0
bispyribac-sodium +	0.019	MPOST						
Kinetic	0.125%	MPOST						
19 Thiobencarb <i>fb</i>	3.0	DPRE	0	91	94	0	0	0
bispyribac-sodium +	0.019	PREFL						
Kinetic	0.125%	PREFL						
20 Thiobencarb <i>fb</i>	3.0	DPRE	0	53	65	0	0	0
bispyribac-sodium +	0.019	POFL						
Kinetic	0.125%	POFL						
21 Clomazone +	0.3	PRE	0	100	100	4	9	0
quinclorac <i>fb</i>	0.25	PRE						
propanil +	2.0	PREFL						
triclopyr	0.25	PREFL						
LSD (0.05)			12	16	14	6	6	0

continued

Table 9. Section 5.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice						Yield 9/21 (lb/A)
			Biomass reduction			Injury			
			6/1	6/5	6/29	6/1	6/5	6/29	
			----- (%) -----						
1 Untreated check			0	0	0	0	0	0	638
2 Clomazone	0.3	PRE	0	0	0	0	0	0	5717
3 Clomazone <i>fb</i> propanil	0.3 4.0	PRE MPOST	0	0	0	0	0	0	7727
4 Clomazone <i>fb</i> propanil + quinclorac	0.3 4.0 0.25	PRE MPOST MPOST	0	0	0	0	0	0	8119
5 Clomazone <i>fb</i> propanil + pendimethalin	0.3 4.0 1.0	PRE MPOST MPOST	0	0	0	0	0	1	7319
6 Propanil	4.0	EPOST	0	0	0	0	0	0	3005
7 Propanil	4.0	MPOST	0	0	0	0	0	0	583
8 Propanil <i>fb</i> propanil	4.0 4.0	EPOST MPOST	0	0	0	0	0	0	2635
9 Propanil + quinclorac	4.0 0.25	MPOST MPOST	0	0	0	0	0	0	3652
10 Propanil + pendimethalin	4.0 1.0	MPOST MPOST	0	0	0	0	0	0	2431
11 Propanil + clomazone	4.0 0.3	MPOST MPOST	0	0	0	0	0	0	3688
12 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE MPOST MPOST	0	0	0	0	0	0	8001
13 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE PREFL PREFL	0	0	0	0	0	0	7719
14 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE POFL POFL	0	0	0	0	0	0	7461
15 Clomazone <i>fb</i> (propanil + molinate)	0.3 4.5	PRE MPOST	0	0	0	0	0	1	8254
16 Clomazone <i>fb</i> (propanil + molinate)	0.3 4.5	PRE PREFL	0	0	0	0	0	3	7603
17 Clomazone <i>fb</i> molinate + bensulfuron	0.3 3.0 0.0375	PRE POFL POFL	0	0	0	0	0	0	7010
18 Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE MPOST MPOST	0	0	0	0	0	0	5158
19 Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE PREFL PREFL	0	0	0	0	0	0	6710
20 Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE POFL POFL	0	0	0	0	0	0	6432
21 Clomazone + quinclorac <i>fb</i> propanil + triclopyr	0.3 0.25 2.0 0.25	PRE PRE PREFL PREFL	0	0	0	0	0	0	8004
LSD (0.05)			0	0	0	0	0	2	1428

Table 10. Bispyribac-sodium in a complete weed control program, Stuttgart, 2000.

SUMMARY

Bispyribac-sodium (Regiment) was evaluated in a program with the soil-applied herbicides clomazone (Command) at 0.3 lb ai/A applied preemergence, pendimethalin (Prowl) at 1.0 lb ai/A applied delayed preemergence, or thiobencarb (Bolero) at 3.0 lb ai/A applied delayed preemergence. Bispyribac-sodium was applied at 9.0 g ai/A at 4- to 5-leaf, 5- to 6-leaf, or postflood timings. Bispyribac-sodium was also evaluated in a total postemergence program with other rice herbicides including triclopyr (Grandstand), propanil + molinate (Arrosolo), propanil (Stam M-4), or molinate (Ordram). These were applied at labeled rates and at various application timings.

Bispyribac-sodium following a preemergence herbicide controlled propanil-resistant and -susceptible barnyardgrass 90 to 100%. Bispyribac-sodium applied alone failed to control broadleaf signalgrass (38%); however, when used in a program with clomazone or propanil broadleaf signalgrass control was attained (>93%). Pitted and tall morningglory control was limited to programs with triclopyr. Northern jointvetch and hemp sesbania were controlled 87 to 100% and 71 to 100%, respectively, with all programs containing bispyribac-sodium. Bearded sprangletop control was obtained with all programs; however, at the time of postemergence application, plants were extremely small, and control would have been less likely with larger plants.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 21, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; MPOST = midpostemergence; PREFL = pre-flood; and POFL = postflood.

Application type	PRE	DPRE	EPOST	MPOST	PREFL	POFL
Date applied	May 18, 2000	May 22, 2000	June 2, 2000	June 12, 2000	June 19, 2000	July 5, 2000
Time	10:00 am	4:30 pm	2:30 pm	7:00 pm	10:00 am	2:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	88 / 77	95 / 92	84 / 84	93 / 84	95 / 88
Relative humidity (%)	83	84	42	62	85	89
Wind (mph)	3	4	2	3	1	2
Cloud cover (%)	20	100	15	40	50	30
Soil moisture	adequate	adequate	adequate	adequate	adequate	flood
Crop stage/Height	N/A	N/A	2 lf / 5"	4 lf / 8"	5-6 lf / 11"	7-8 lf / 18"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 11001
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18
Gpa / Psi	10 / 25	10 / 25	10 / 24	10 / 22	10 / 25	10 / 28
Weed species (density)	----- [# leaves/height (in.)] -----					
R-ECHCG (9/ft in row)	N/A	N/A	1-2 lf / 0.5"	4-5 lf / 4.5-5"	5 lf / 8-9"	7-8 lf / 13-15"
S-ECHCG (10/ft in row)	N/A	N/A	1 lf / 0.5"	4 lf / 3.5-4"	5 lf / 7-9"	6-7 lf / 13-14"
N-ECHCG (8-10/ft ²)	N/A	N/A	2 lf / 0.5"	4-5 lf / 4.5-5"	5-6 lf / 8-9"	7-8 lf / 13-15"
BRAPP (14/ft in row)	N/A	N/A	1 lf / 0.5"	3-4 lf / 2-3"	6-7 lf / 4-6"	8-11 lf / 8-9"
SEBEX (30/ft in row)	N/A	N/A	2-3 lf / 2-3"	6 lf / 8-10"	8-10 lf / 8-10"	11-13 lf / 15-18"
AESVI (3/ft in row)	N/A	N/A	1 lf / 2"	3-4 lf / 2-3"	5 lf / 3-4"	10-12 lf / 9-11"
IPOLA (10/ft in row)	N/A	N/A	1-2 lf / 0.5"	5 lf / 5.5"	5-6 lf / 6-7"	15+ lf / 9-11"
PHBPU (10/ft in row)	N/A	N/A	1 lf / 0.5"	3 lf / 3-4"3"	4-5 lf / 5-6"	10-12 lf / 8-10"
LEFFA (0.3/ft ²)	N/A	N/A	N/A	N/A	1 lf / 0.5"	1-2 lf / 1.5"

Table 10. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control							
			Natural (N-ECHCG)				Susceptible (S-ECHCG)			
			6/1	6/15	7/18	8/17	6/1	6/15	7/18	8/17
----- (%) -----										
1 Untreated check			0	0	0	0	0	0	0	0
2 Bispyribac-sodium + Kinetic	0.019 0.125%	MPOST MPOST	0	18	63	59	0	15	84	60
3 (Propanil + molinate) <i>fb</i> triclopyr	4.5 0.28	MPOST POFL	0	73	74	63	0	61	85	63
4 Bispyribac-sodium + Kinetic <i>fb</i>	0.019 0.125%	MPOST MPOST	0	15	83	83	0	18	100	86
	0.019 0.125%	PREFL PREFL								
5 Propanil <i>fb</i> (propanil + molinate)	3.0 4.0	EPOST PREFL	0	81	63	58	0	78	83	64
6 Bispyribac-sodium + Kinetic <i>fb</i>	0.019 0.125%	MPOST MPOST	0	15	88	99	0	20	95	99
	0.026 0.125%	POFL POFL								
7 (Propanil + molinate) <i>fb</i> molinate + bensulfuron + Agri-Dex	4.5 3.0 0.0375 1%	MPOST POFL POFL POFL	0	79	93	88	0	79	95	88
8 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.017 0.125%	DPRE MPOST MPOST	100	100	100	98	100	100	100	95
9 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.019 0.125%	DPRE MPOST MPOST	100	100	100	100	100	100	100	100
10 Pendimethalin <i>fb</i> (propanil + molinate)	1.0 4.5	DPRE MPOST	100	100	100	100	100	100	100	100
11 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE PREFL PREFL	96	100	100	100	96	100	100	100
12 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE POFL POFL	99	100	100	100	99	100	100	100
13 Clomazone <i>fb</i> (propanil + molinate)	0.3 4.5	PRE PREFL	97	100	100	100	97	100	100	100
14 Clomazone <i>fb</i> molinate + bensulfuron + Agri-Dex	0.3 3.0 0.0375 1%	PRE POFL POFL POFL	98	100	100	100	98	100	100	100
15 Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE MPOST MPOST	100	89	90	90	100	86	93	90
16 Thiobencarb <i>fb</i> (propanil + molinate)	3.0 4.5	DPRE MPOST	99	98	98	98	99	98	98	98
17 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.019 0.125%	DPRE POFL POFL	100	100	100	100	100	100	100	100
18 Pendimethalin <i>fb</i> molinate	1.0 3.0	DPRE POFL	100	100	96	96	100	100	100	96
19 Pendimethalin <i>fb</i> bispyribac-sodium + triclopyr + Kinetic	1.0 0.019 0.28 0.125%	DPRE POFL POFL POFL	100	100	100	100	100	100	100	100

continued

Table 10. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Natural (N-ECHCG)				Susceptible (S-ECHCG)				
			6/1	6/15	7/18	8/17	6/1	6/15	7/18	8/17	
			----- (%) -----								
20	Pendimethalin <i>fb</i>	1.0	DPRE	100	100	100	100	100	100	100	100
	molinolate +	3.0	POFL								
	triclopyr	0.28	POFL								
21	Thiobencarb +	2.0	EPOST	0	98	100	98	0	100	100	98
	propanil <i>fb</i>	3.0	EPOST								
	thiobencarb +	2.0	PREFL								
	bispyribac-sodium	0.019	PREFL								
LSD (0.05)				3	16	11	14	3	17	9	12

continued

Table 10. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Resistant barnyardgrass (R-ECHCG)				Broadleaf signalgrass (BRAPP)				
			6/1	6/15	7/18	8/17	6/1	6/15	7/18	8/17	
			----- (%) -----								
1	Untreated check			0	0	0	0	0	0	0	0
2	Bispyribac-sodium +	0.019	MPOST	0	15	68	63	0	10	30	43
	Kinetic	0.125%	MPOST								
	triclopyr	0.28	POFL								
3	(Propanil + molinate) <i>fb</i>	4.5	MPOST	0	20	53	55	0	28	68	50
	triclopyr	0.28	POFL								
4	Bispyribac-sodium +	0.019	MPOST	0	23	90	95	10	10	35	38
	Kinetic <i>fb</i>	0.125%	MPOST								
	bispyribac-sodium +	0.019	PREFL								
	Kinetic	0.125%	PREFL								
5	Propanil <i>fb</i>	3.0	EPOST	0	38	40	53	24	30	100	100
	(propanil + molinate)	4.0	PREFL								
6	Bispyribac-sodium +	0.019	MPOST	0	15	91	100	0	10	25	28
	Kinetic <i>fb</i>	0.125%	MPOST								
	bispyribac-sodium +	0.026	POFL								
	Kinetic	0.125%	POFL								
7	(Propanil + molinate) <i>fb</i>	4.5	MPOST	0	40	88	98	25	45	70	65
	molinolate +	3.0	POFL								
	bensulfuron +	0.0375	POFL								
	Agri-Dex	1%	POFL								
8	Pendimethalin <i>fb</i>	1.0	DPRE	100	100	100	100	100	90	90	80
	bispyribac-sodium +	0.017	MPOST								
	Kinetic	0.125%	MPOST								
9	Pendimethalin <i>fb</i>	1.0	DPRE	100	100	100	100	100	98	98	85
	bispyribac-sodium +	0.019	MPOST								
	Kinetic	0.125%	MPOST								
10	Pendimethalin <i>fb</i>	1.0	DPRE	100	100	100	100	100	99	96	96
	(propanil + molinate)	4.5	MPOST								
11	Clomazone <i>fb</i>	0.3	PRE	96	100	100	100	94	100	100	100
	bispyribac-sodium +	0.019	PREFL								
	Kinetic	0.125%	PREFL								

continued

Table 10. Section 2. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Resistant barnyardgrass (R-ECHCG)				Broadleaf signalgrass (BRAPP)				
			6/1	6/15	7/18	8/17	6/1	6/15	7/18	8/17	
			----- (%) -----								
12	Clomazone <i>fb</i>	0.3	PRE	100	100	100	100	95	100	100	100
	bispyribac-sodium + Kinetic	0.019 0.125%	POFL POFL								
13	Clomazone <i>fb</i> (propanil + molinate)	0.3 4.5	PRE PREFL	97	100	100	100	96	100	100	100
14	Clomazone <i>fb</i> molinate + bensulfuron + Agri-Dex	0.3 3.0 0.0375 1%	PRE POFL POFL POFL	99	100	100	100	91	100	100	100
15	Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE MPOST MPOST	100	86	90	94	98	61	65	70
16	Thiobencarb <i>fb</i> (propanil + molinate)	3.0 4.5	DPRE MPOST	100	100	98	100	97	72	99	93
17	Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.019 0.125%	DPRE POFL POFL	100	100	100	100	100	98	96	85
18	Pendimethalin <i>fb</i> molinate	1.0 3.0	DPRE POFL	100	100	100	100	100	91	95	83
19	Pendimethalin <i>fb</i> bispyribac-sodium + triclopyr + Kinetic	1.0 0.019 0.28 0.125%	DPRE POFL POFL POFL	100	100	100	100	100	95	80	63
20	Pendimethalin <i>fb</i> molinate + triclopyr	1.0 3.0 0.28	DPRE POFL POFL	100	100	100	100	100	95	80	73
21	Thiobencarb + propanil <i>fb</i> thiobencarb + bispyribac-sodium	2.0 3.0 2.0 0.019	EPOST EPOST PREFL PREFL	0	96	100	100	0	91	100	95
LSD (0.05)				2	12	12	7	22	13	21	27

continued

Table 10. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control									
			Tall morningglory (PHBPU)			Pitted morningglory (IPOLA)			Northern jointvetch (AESVI)			
			6/1	6/15	7/18	6/1	6/15	7/18	6/15	7/18	8/17	
			----- (%) -----									
1	Untreated check		0	0	0	0	0	0	0	0	0	
2	Bispyribac-sodium + Kinetic triclopyr	0.019 0.125% 0.28	MPOST MPOST POFL	0	30	100	0	25	100	0	100	100
3	(Propanil + molinate) <i>fb</i> triclopyr	4.5 0.28	MPOST POFL	0	35	100	0	35	100	66	100	100
4	Bispyribac-sodium + Kinetic <i>fb</i> bispyribac-sodium + Kinetic	0.019 0.125% 0.019 0.125%	MPOST MPOST PREFL PREFL	0	0	30	0	0	33	0	100	99

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 10. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Tall morningglory (PHBPU)			Pitted morningglory (IPOLA)			Northern jointvetch (AESVI)		
			6/15	7/18	6/1	6/15	7/18	6/15	7/18	8/17	
			----- (%) -----								
5 Propanil <i>fb</i> (propanil + molinate)	3.0 4.0	EPOST PREFL	0	40	70	0	40	70	98	100	100
6 Bispyribac-sodium + Kinetic <i>fb</i>	0.019 0.125%	MPOST MPOST	0	18	45	0	20	48	0	100	100
	0.026 0.125%	POFL POFL									
7 (Propanil + molinate) <i>fb</i> molinate +	4.5 3.0	MPOST POFL	0	36	63	0	33	63	78	91	81
	0.0375 1%	POFL POFL									
8 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.017 0.125%	DPRE MPOST MPOST	0	33	33	0	30	33	0	100	100
9 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.019 0.125%	DPRE MPOST MPOST	0	28	33	0	30	30	0	79	88
10 Pendimethalin <i>fb</i> (propanil + molinate)	1.0 4.5	DPRE MPOST	0	28	45	0	28	45	85	65	68
11 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE PREFL PREFL	0	0	45	0	0	45	0	98	100
12 Clomazone <i>fb</i> bispyribac-sodium + Kinetic	0.3 0.019 0.125%	PRE POFL POFL	0	0	43	0	0	43	0	100	98
13 Clomazone <i>fb</i> (propanil + molinate)	0.3 4.5	PRE PREFL	0	15	43	0	13	38	0	100	98
14 Clomazone <i>fb</i> molinate +	0.3 3.0	PRE POFL	0	0	25	0	0	30	0	90	95
	0.0375 1%	POFL POFL									
15 Thiobencarb <i>fb</i> bispyribac-sodium + Kinetic	3.0 0.019 0.125%	DPRE MPOST MPOST	0	13	30	0	18	25	0	100	95
16 Thiobencarb <i>fb</i> (propanil + molinate)	3.0 4.5	DPRE MPOST	0	37	34	0	38	30	94	80	67
17 Pendimethalin <i>fb</i> bispyribac-sodium + Kinetic	1.0 0.019 0.125%	DPRE POFL POFL	0	0	30	0	0	30	0	94	100
18 Pendimethalin <i>fb</i> molinate	1.0 3.0	DPRE POFL	0	18	35	0	18	35	0	30	33
19 Pendimethalin <i>fb</i> bispyribac-sodium + triclopyr + Kinetic	1.0 0.019 0.28 0.125%	DPRE POFL POFL POFL	0	0	96	0	0	96	0	100	100
20 Pendimethalin <i>fb</i> molinate + triclopyr	1.0 3.0 0.28	DPRE POFL POFL	0	0	100	0	0	100	0	90	95
21 Thiobencarb + propanil <i>fb</i> thiobencarb + bispyribac-sodium	2.0 3.0 2.0 0.019	EPOST EPOST PREFL PREFL	0	50	58	0	48	55	84	100	100
LSD (0.05)			0	12	18	0	12	17	9	14	15

continued

Table 10. Section 4.

Herbicide	Rate (lb ai/A)	Application timing	Weed control			Effect on rice Chlorosis			
			Hemp sesbania (SEBEX)			Bearded sprangletop (LEFFA)			
			6/15	7/18	8/17	8/17	6/1	6/9	6/15
			----- (%) -----						
1 Untreated check			0	0	0	0	0	0	0
2 Bispyribac-sodium + Kinetic	0.019	MPOST	13	100	100	100	0	0	0
	0.125%	MPOST							
	0.28	POFL							
3 (Propanil + molinate) <i>fb</i> triclopyr	4.5	MPOST	81	95	95	100	0	0	0
	0.28	POFL							
4 Bispyribac-sodium + Kinetic <i>fb</i>	0.019	MPOST	15	100	96	88	0	0	0
	0.125%	MPOST							
	0.019	PREFL							
	0.125%	PREFL							
5 Propanil <i>fb</i>	3.0	EPOST	99	98	98	95	0	0	0
(propanil + molinate)	4.0	PREFL							
6 Bispyribac-sodium + Kinetic <i>fb</i>	0.019	MPOST	10	96	99	93	0	0	0
	0.125%	MPOST							
	0.026	POFL							
	0.125%	POFL							
7 (Propanil + molinate) <i>fb</i> molinate +	4.5	MPOST	86	90	91	90	0	0	0
	3.0	POFL							
	0.0375	POFL							
	1%	POFL							
8 Pendimethalin <i>fb</i> bispyribac-sodium +	1.0	DPRE	33	74	74	100	0	0	0
	0.017	MPOST							
	0.125%	MPOST							
9 Pendimethalin <i>fb</i> bispyribac-sodium +	1.0	DPRE	38	70	71	100	0	0	0
	0.019	MPOST							
	0.125%	MPOST							
10 Pendimethalin <i>fb</i> (propanil + molinate)	1.0	DPRE	88	78	80	100	0	0	0
	4.5	MPOST							
11 Clomazone <i>fb</i> bispyribac-sodium +	0.3	PRE	0	96	94	100	18	45	5
	0.019	PREFL							
	0.125%	PREFL							
12 Clomazone <i>fb</i> bispyribac-sodium +	0.3	PRE	0	59	84	100	25	46	6
	0.019	POFL							
	0.125%	POFL							
13 Clomazone <i>fb</i> (propanil + molinate)	0.3	PRE	0	98	98	100	18	45	7
	4.5	PREFL							
14 Clomazone <i>fb</i> molinate +	0.3	PRE	0	43	53	100	19	45	5
	3.0	POFL							
	0.0375	POFL							
	1%	POFL							
15 Thiobencarb <i>fb</i> bispyribac-sodium +	3.0	DPRE	35	86	81	100	0	0	0
	0.019	MPOST							
	0.125%	MPOST							
16 Thiobencarb <i>fb</i> (propanil + molinate)	3.0	DPRE	91	86	86	100	0	0	0
	4.5	MPOST							
17 Pendimethalin <i>fb</i> bispyribac-sodium +	1.0	DPRE	0	73	95	100	0	0	0
	0.019	POFL							
	0.125%	POFL							
18 Pendimethalin <i>fb</i> molinate	1.0	DPRE	0	18	10	100	0	0	0
	3.0	POFL							

continued

Table 10. Section 4. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Hemp sesbania (SEBEX)			Bearded sprangletop (LEFFA)		Effect on rice Chlorosis			
			6/15	7/18	8/17	8/17		6/1	6/9	6/15	
			----- (%) -----								
19	Pendimethalin <i>fb</i>	1.0	DPRE	0	80	98	100		0	0	0
	bispyribac-sodium +	0.019	POFL								
	triclopyr +	0.28	POFL								
	Kinetic	0.125%	POFL								
20	Pendimethalin <i>fb</i>	1.0	DPRE	0	74	84	100		0	0	0
	molinatate +	3.0	POFL								
	triclopyr	0.28	POFL								
21	Thiobencarb +	2.0	EPOST	99	100	100	100		0	0	0
	propanil <i>fb</i>	3.0	EPOST								
	thiobencarb +	2.0	PREFL								
	bispyribac-sodium	0.019	PREFL								
LSD (0.05)				8	14	12	9		8	4	1

continued

Table 10. Section 5.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice								
			Biomass reduction			Injury			Days to 50% Heading	Yield	
			6/15	7/18	6/1	6/15	7/18	6/15	7/18	8/17	
			----- (%) -----						(days)	(lb/A)	
1	Untreated check		0	0	0	0	0	0	87	3539	
2	Bispyribac-sodium +	0.019	MPOST	0	0	0	0	0	86	6889	
	Kinetic	0.125%	MPOST								
	triclopyr	0.28	POFL								
3	(Propanil + molinate) <i>fb</i>	4.5	MPOST	0	0	0	0	0	86	6127	
	triclopyr	0.28	POFL								
4	Bispyribac-sodium +	0.019	MPOST	0	0	0	0	0	86	8068	
	Kinetic <i>fb</i>	0.125%	MPOST								
	bispyribac-sodium +	0.019	PREFL								
	Kinetic	0.125%	PREFL								
5	Propanil <i>fb</i>	3.0	EPOST	0	0	0	0	0	86	7149	
	(propanil + molinate)	4.0	PREFL								
6	Bispyribac-sodium +	0.019	MPOST	0	0	0	0	0	87	7782	
	Kinetic <i>fb</i>	0.125%	MPOST					10			
	bispyribac-sodium +	0.026	POFL								
	Kinetic	0.125%	POFL								
7	(Propanil + molinate) <i>fb</i>	4.5	MPOST	0	0	0	0	0	87	7389	
	molinatate +	3.0	POFL					16			
	bensulfuron +	0.0375	POFL								
	Agri-Dex	1%	POFL								
8	Pendimethalin <i>fb</i>	1.0	DPRE	3	0	1	0	0	3	88	7950
	bispyribac-sodium +	0.017	MPOST								
	Kinetic	0.125%	MPOST								
9	Pendimethalin <i>fb</i>	1.0	DPRE	3	0	1	1	0	0	86	8334
	bispyribac-sodium +	0.019	MPOST								
	Kinetic	0.125%	MPOST								
10	Pendimethalin <i>fb</i>	1.0	DPRE	0	0	3	0	0	0	86	8643
	(propanil + molinate)	4.5	MPOST								

continued

Table 10. Section 5. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice							
			Biomass reduction			Injury			Days to 50% Heading	Yield
			6/15	7/18	6/1	6/15	7/18	6/15	7/18	8/17
			----- (%) -----			-----			(days)	(lb/A)
11 Clomazone <i>fb</i>	0.3	PRE	3	15	0	11	0	0	86	7879
bispyribac-sodium + Kinetic	0.019 0.125%	PREFL PREFL								
12 Clomazone <i>fb</i>	0.3	PRE	1	6	1	5	0	15	86	8563
bispyribac-sodium + Kinetic	0.019 0.125%	POFL POFL								
13 Clomazone <i>fb</i>	0.3	PRE	1	1	0	3	0	3	87	8463
(propanil + molinate)	4.5	PREFL								
14 Clomazone <i>fb</i>	0.3	PRE	0	0	0	1	0	16	88	7517
molinate + bensulfuron + Agri-Dex	3.0 0.0375 1%	POFL POFL POFL								
15 Thiobencarb <i>fb</i>	3.0	DPRE	0	0	5	0	0	0	88	7607
bispyribac-sodium + Kinetic	0.019 0.125%	MPOST MPOST								
16 Thiobencarb <i>fb</i>	3.0	DPRE	0	0	0	2	0	0	87	6864
(propanil + molinate)	4.5	MPOST								
17 Pendimethalin <i>fb</i>	1.0	DPRE	0	0	0	0	0	8	88	8582
bispyribac-sodium + Kinetic	0.019 0.125%	POFL POFL								
18 Pendimethalin <i>fb</i>	1.0	DPRE	0	0	0	0	0	16	87	6795
molinate	3.0	POFL								
19 Pendimethalin <i>fb</i>	1.0	DPRE	0	0	0	0	0	0	87	8254
bispyribac-sodium + triclopyr + Kinetic	0.019 0.28 0.125%	POFL POFL POFL								
20 Pendimethalin <i>fb</i>	1.0	DPRE	0	0	0	0	0	18	88	7457
molinate + triclopyr	3.0 0.28	POFL POFL								
21 Thiobencarb + propanil <i>fb</i>	2.0 3.0	EPOST EPOST	0	0	0	1	0	0	86	8502
thiobencarb + bispyribac-sodium	2.0 0.019	PREFL PREFL								
LSD (0.05)			3	8	4	6	0	11	3	1698

Table 11. Bispyribac-sodium and RH-149109 in a total postemergence program, Stuttgart, 2000.

SUMMARY

Bispyribac-sodium (Regiment) and RH-149109 were evaluated in a total postemergence program tank-mixed with the soil-applied herbicides quinclorac (Facet) at 0.25 lb ai/A, pendimethalin (Prowl) at 1.0 lb ai/A, or thiobencarb (Bolero) 3.0 lb ai/A. Bispyribac-sodium was applied at 0.0192 and 0.039 lb ai/A at the 3- to 4-leaf grass stage with soil-applied herbicides. A second application of bispyribac-sodium, applied alone, was made at the 5- to 6-leaf rice stage using the same rate used at the 3- to 4-leaf grass stage. RH-149109 was used at 0.035, 0.053, and 0.071 lb ai/A. A second application of RH-149109, applied alone, was made at the 5- to 6-leaf rice stage using the same rate used at the 3- to 4-leaf grass stage.

No differences were observed between bispyribac-sodium and RH-149109 for control of propanil-resistant and -susceptible barnyardgrass. Broadleaf signalgrass control ranged from 62 to 98% with all herbicide programs evaluated. Quinclorac was needed in a program for the control of pitted and tall morningglory. All programs controlled northern jointvetch and hemp sesbania.

Bispyribac-sodium at 0.0192 lb/A generally pruned rice roots 20% when compared visually to roots of the untreated check plants. RH-149109 applied at 0.053 lb/A pruned rice roots by 25% with a single application and 60% with a sequential application. Rice heading was delayed when the higher rates of both compounds were used in a sequential program; however, these same programs tended to give the highest yields in this experiment.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 21, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: MPOST = midpostemergence; and PREFL = pre flood.

Application type	MPOST	PREFL
Date applied	June 12, 2000	June 22, 2000
Time	7:00 pm	8:00 am
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	84 / 84	78 / 83
Relative humidity (%)	62	90
Wind (mph)	4	2
Cloud cover (%)	40	50
Soil moisture	dry	wet
Crop stage/Height	4 lf / 8"	5-6 lf / 11"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 11002
Boom ht / # Noz / Spacing (in.)	25 / 3 / 18	29 / 3 / 18
Gpa / Psi	15 / 38	15 / 25
Weed species (density)	----- [# leaves/height (in.)] -----	
S-ECHCG (15/ft in row)	3-4 lf / 2-3"	5 lf / 6-8"
R-ECHCG (20/ft in row)	4 lf / 4-5"	5-6 lf / 7-8"
N-ECHCG (8-10/ft ²)	4-5 lf / 5-6"	6 lf / 8-10"
BRAPP (25/ft in row)	4-5 lf / 3-3.5"	7-9 lf / 4-5"
IPOLA (20/ft in row)	5-6 lf / 4"	7-8 lf / 5-6"
PHBPU (15/ft in row)	3-4 lf / 2-3"	6-8 lf / 5-6"
AESVI (8/ft in row)	4-5 lf / 3-4"	6-7 lf / 5"
SEBEX (40/ft in row)	5 lf / 8-9"	6-8 lf / 10-12"
LEFFA (0.2/ft ²)	N/A	1 lf / 0.5"

Table 11. Section 1.

Herbicide	Application		Barnyardgrass control									
	Rate (lb ai/A)	timing	Natural (N-ECHCG)			Susceptible (S-ECHCG)			Resistant (R-ECHCG)			
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16	
1	Untreated check		0	0	0	0	0	0	0	0	0	0
2	Propanil + quinclorac <i>fb</i>	4.0 MPOST 0.25 MPOST	58	50	34	58	50	34	55	50	36	
	propanil	4.0 PREFL										
3	Propanil + pendimethalin <i>fb</i>	4.0 MPOST 1.0 MPOST	41	43	30	41	43	25	28	43	23	
	propanil	4.0 PREFL										
4	Propanil + quinclorac <i>fb</i>	4.0 MPOST 0.25 MPOST	48	89	89	48	95	89	48	95	89	
	RH-149109	0.053 PREFL										
5	Propanil + pendimethalin <i>fb</i>	4.0 MPOST 1.0 MPOST	55	95	98	58	100	98	45	100	99	
	RH-149109	0.053 PREFL										
6	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST	51	93	95	51	93	95	49	93	96	
	RH-149109	0.053 PREFL										
7	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST	43	56	43	43	60	43	53	60	40	
	propanil	4.0 PREFL										
8	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST	49	95	99	49	99	99	46	99	97	
	RH-149109	0.071 PREFL										
9	Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.019 MPOST 0.25 MPOST 0.125% MPOST	44	74	90	44	90	90	34	90	90	
	bispyribac-sodium + Kinetic	0.019 PREFL 0.125% PREFL										
10	Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.039 MPOST 0.25 MPOST 0.125% MPOST	41	91	96	41	96	96	38	93	91	
	bispyribac-sodium + Kinetic	0.039 PREFL 0.125% PREFL										
11	Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.019 MPOST 3.0 MPOST 0.125% MPOST	41	85	90	41	90	90	33	90	90	
	bispyribac-sodium + Kinetic	0.019 PREFL 0.125% PREFL										
12	Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.039 MPOST 3.0 MPOST 0.125% MPOST	53	95	98	53	99	98	45	96	97	
	bispyribac-sodium + Kinetic	0.039 PREFL 0.125% PREFL										
13	Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.019 MPOST 1.0 MPOST 0.125% MPOST	34	75	92	34	95	92	35	95	96	
	bispyribac-sodium + Kinetic	0.019 PREFL 0.125% PREFL										
14	Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.039 MPOST 1.0 MPOST 0.125% MPOST	38	98	99	38	98	99	33	98	99	
	bispyribac-sodium + Kinetic	0.039 PREFL 0.125% PREFL										

continued

Table 11. Section 1. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Natural (N-ECHCG)			Susceptible (S-ECHCG)			Resistant (R-ECHCG)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
			----- (%) -----								
15	RH-149109 + pendimethalin <i>fb</i>	0.035 MPOST 1.0 MPOST	33	89	94	28	94	94	31	94	92
16	RH-149109 + pendimethalin <i>fb</i>	0.035 PREFL 0.053 MPOST 1.0 MPOST	73	89	96	66	98	96	36	98	96
17	RH-149109 + pendimethalin <i>fb</i>	0.071 MPOST 1.0 MPOST 0.071 PREFL	35	90	90	35	98	90	35	96	99
18	RH-149109 + thiobencarb <i>fb</i>	0.035 MPOST 3.0 MPOST 0.035 PREFL	33	93	91	33	100	91	33	98	93
19	RH-149109 + thiobencarb <i>fb</i>	0.053 MPOST 3.0 MPOST 0.053 PREFL	35	93	97	35	98	97	43	98	98
20	RH-149109 + thiobencarb <i>fb</i>	0.071 MPOST 3.0 MPOST 0.071 PREFL	43	98	100	43	98	100	43	98	100
LSD (0.05)			19	10	13	19	10	13	17	10	12

continued

Table 11. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Broadleaf signalgrass (BRAPP)			Tall morningglory (PHBPU)			Pitted morningglory (IPOLA)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
			----- (%) -----								
1	Untreated check		0	0	0	0	0	0	0	0	0
2	Propanil + quinclorac <i>fb</i>	4.0 MPOST 0.25 MPOST	59	99	91	89	100	100	66	100	100
3	Propanil + pendimethalin <i>fb</i>	4.0 PREFL 4.0 MPOST 1.0 MPOST	44	93	90	86	100	100	49	100	100
4	Propanil + quinclorac <i>fb</i>	4.0 PREFL 4.0 MPOST 0.25 MPOST	61	100	98	83	100	100	48	100	100
5	Propanil + pendimethalin <i>fb</i>	0.053 PREFL 4.0 MPOST 1.0 MPOST	36	100	99	54	79	83	13	79	83
6	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST 0.053 PREFL	23	83	79	70	100	100	14	100	100
7	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST 4.0 PREFL	34	99	84	45	100	100	13	100	100

continued

Table 11. Section 2. Continued.

Herbicide	Application Rate timing (lb ai/A)		Weed control								
			Broadleaf signalgrass (BRAPP)			Tall morningglory (PHBPU)			Pitted morningglory (IPOLA)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
			----- (%) -----								
8	RH-149109 + quinclorac <i>fb</i>	0.053 MPOST 0.25 MPOST	21	96	90	79	100	100	20	100	100
9	RH-149109 Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.071 PREFL 0.019 MPOST 0.25 MPOST 0.125% MPOST	18	79	62	64	100	100	20	100	100
10	bispyribac-sodium + Kinetic Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	+ 0.019 PREFL 0.125% PREFL 0.039 MPOST 0.25 MPOST 0.125% MPOST	33	80	71	75	100	100	15	100	100
11	bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	+ 0.019 MPOST 3.0 MPOST 0.125% MPOST	23	68	69	15	43	10	3	28	10
12	bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	+ 0.019 PREFL 0.125% PREFL 0.039 MPOST 3.0 MPOST 0.125% MPOST	15	93	82	20	100	85	3	89	85
13	bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	+ 0.039 PREFL 0.125% PREFL 0.019 MPOST 1.0 MPOST 0.125% MPOST	10	78	63	11	23	15	0	23	18
14	bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	+ 0.019 PREFL 0.125% PREFL 0.039 MPOST 1.0 MPOST 0.125% MPOST	16	83	84	20	91	100	0	91	100
15	bispyribac- sodium + Kinetic RH-149109 + pendimethalin <i>fb</i>	+0.039 PREFL 0.125% PREFL 0.035 MPOST 1.0 MPOST	14	75	80	0	43	24	0	35	24
16	RH-149109 pendimethalin <i>fb</i>	0.035 PREFL 0.053 MPOST 1.0 MPOST	8	56	65	8	55	23	0	60	23
17	RH-149109 pendimethalin <i>fb</i>	0.053 PREFL 0.071 MPOST 1.0 MPOST	11	80	87	4	80	63	0	78	65
18	RH-149109 thiobencarb <i>fb</i>	0.071 PREFL 0.035 MPOST 3.0 MPOST	23	81	65	4	50	10	1	33	10
19	RH-149109 thiobencarb <i>fb</i>	0.035 PREFL 0.053 MPOST 3.0 MPOST	28	90	92	16	50	53	1	50	53
20	RH-149109 thiobencarb <i>fb</i>	0.053 PREFL 0.071 MPOST 3.0 MPOST	14	94	92	1	65	58	0	55	58
	RH-149109	0.071 PREFL									
LSD (0.05)			20	25	30	21	31	29	13	29	29

continued

Table 11. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control							
			Northern jointvetch (AESVI)			Hemp sesbania (SEBEX)			Bearded sprangletop (LEFFA)	
			6/21	7/11	8/17	6/21	7/11	8/17	7/18	8/17
----- (%) -----										
1 Untreated check			0	0	0	0	0	0	0	0
2 Propanil + quinclorac <i>fb</i>	4.0 0.25	MPOST MPOST	100	100	100	100	100	100	58	88
3 Propanil + pendimethalin <i>fb</i>	4.0 1.0	MPOST MPOST	100	100	100	98	100	100	93	90
4 Propanil + quinclorac <i>fb</i>	4.0 0.25	MPOST MPOST	100	100	100	100	100	100	60	69
5 Propanil + pendimethalin <i>fb</i>	4.0 1.0	MPOST MPOST	95	100	100	96	100	100	76	78
6 RH-149109 + quinclorac <i>fb</i>	0.053 0.25	MPOST MPOST	100	100	100	95	100	100	55	60
7 RH-149109 + quinclorac <i>fb</i>	0.053 0.25	MPOST MPOST	98	100	100	91	100	100	48	74
8 RH-149109 + quinclorac <i>fb</i>	0.053 0.25	MPOST MPOST	99	100	100	98	100	100	70	76
9 Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.019 0.25 0.125%	MPOST MPOST MPOST	96	100	100	89	100	100	53	60
10 Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.039 0.25 0.125%	MPOST MPOST MPOST	95	100	100	85	100	100	75	80
11 Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.019 3.0 0.125%	MPOST MPOST MPOST	91	100	100	63	100	100	73	84
12 Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.039 3.0 0.125%	MPOST MPOST MPOST	91	100	100	59	100	100	78	76
13 Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.019 1.0 0.125%	MPOST MPOST MPOST	84	100	100	44	100	100	63	73
14 Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.039 1.0 0.125%	MPOST MPOST MPOST	99	100	100	51	100	100	66	71
bispyribac-sodium + Kinetic	0.039 0.125%	PREFL PREFL								

continued

Table 11. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Northern jointvetch (AESVI)			Hemp sesbania (SEBEX)			Bearded sprangletop (LEFFA)		
			6/21	7/11	8/17	6/21	7/11	8/17	7/18	8/17	
			----- (%) -----								
15	RH-149109 + pendimethalin <i>fb</i>	0.035	MPOST	95	100	100	49	100	100	64	68
		1.0	MPOST								
		0.035	PREFL								
16	RH-149109 + pendimethalin <i>fb</i>	0.053	MPOST	91	100	100	50	100	100	66	71
		1.0	MPOST								
		0.053	PREFL								
17	RH-149109 + pendimethalin <i>fb</i>	0.071	MPOST	96	100	100	48	100	100	62	84
		1.0	MPOST								
		0.071	PREFL								
18	RH-149109 + thiobencarb <i>fb</i>	0.035	MPOST	94	100	100	43	100	100	75	65
		3.0	MPOST								
		0.035	PREFL								
19	RH-149109 + thiobencarb <i>fb</i>	0.053	MPOST	96	100	100	60	100	100	76	84
		3.0	MPOST								
		0.053	PREFL								
20	RH-149109 + thiobencarb <i>fb</i>	0.071	MPOST	98	100	100	45	100	100	77	84
		3.0	MPOST								
		0.071	PREFL								
LSD (0.05)				10	0	0	14	0	0	25	17

continued

Table 11. Section 4.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice						
			Injury			Root pruning	Days to 50%	Yield	
			6/29	7/11	7/18	7/11	heading	9/21	
			----- (%) -----						
1	Untreated check		0	0	0	0	89	697	
2	Propanil + quinclorac <i>fb</i>	4.0	MPOST	0	0	0	0	88	3847
		0.25	MPOST						
		4.0	PREFL						
3	Propanil + pendimethalin <i>fb</i>	4.0	MPOST	0	0	0	0	88	2027
		1.0	MPOST						
		4.0	PREFL						
4	Propanil + quinclorac <i>fb</i>	4.0	MPOST	0	5	0	24	87	7331
		0.25	MPOST						
		0.053	PREFL						
5	Propanil + pendimethalin <i>fb</i>	4.0	MPOST	0	3	0	31	88	7109
		1.0	MPOST						
		0.053	PREFL						
6	RH-149109 + quinclorac <i>fb</i>	0.053	MPOST	0	4	0	41	87	6159
		0.25	MPOST						
		0.053	PREFL						
7	RH-149109 + quinclorac <i>fb</i>	0.053	MPOST	0	3	0	25	87	5438
		0.25	MPOST						
		4.0	PREFL						

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 11. Section 4. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice					
			Injury			Root pruning	Days to 50% heading	Yield
			6/29	7/11	7/18	7/11	(DAE)	9/21
			----- (%) -----				(lb/A)	
8 RH-149109 + quinclorac <i>fb</i>	0.053	MPOST	0	11	0	59	87	6016
RH-149109	0.25	MPOST						
	0.071	PREFL						
9 Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.019	MPOST	0	6	0	25	87	7006
	0.25	MPOST						
	0.125%	MPOST						
bispyribac-sodium + Kinetic	0.019	PREFL						
	0.125%	PREFL						
10 Bispyribac-sodium + quinclorac + Kinetic <i>fb</i>	0.039	MPOST	0	10	0	48	87	6571
	0.25	MPOST						
	0.125%	MPOST						
bispyribac-sodium + Kinetic	0.039	PREFL						
	0.125%	PREFL						
11 Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.019	MPOST	0	0	0	20	87	6475
	3.0	MPOST						
	0.125%	MPOST						
bispyribac-sodium + Kinetic	0.019	PREFL						
	0.125%	PREFL						
12 Bispyribac-sodium + thiobencarb + Kinetic <i>fb</i>	0.039	MPOST	0	11	0	41	85	7196
	3.0	MPOST						
	0.125%	MPOST						
bispyribac-sodium + Kinetic	0.039	PREFL						
	0.125%	PREFL						
13 Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.019	MPOST	0	4	0	19	85	6697
	1.0	MPOST						
	0.125%	MPOST						
bispyribac-sodium + Kinetic	0.019	PREFL						
	0.125%	PREFL						
14 Bispyribac-sodium + pendimethalin + Kinetic <i>fb</i>	0.039	MPOST	0	10	0	49	87	7040
	1.0	MPOST						
	0.125%	MPOST						
bispyribac- sodium + Kinetic	0.039	PREFL						
	0.125%	PREFL						
15 RH-149109 + pendimethalin <i>fb</i>	0.035	MPOST	0	11	0	46	86	6960
	1.0	MPOST						
RH-149109	0.035	PREFL						
16 RH-149109 + pendimethalin <i>fb</i>	0.053	MPOST	0	14	0	64	85	6556
	1.0	MPOST						
RH-149109	0.053	PREFL						
17 RH-149109 + pendimethalin <i>fb</i>	0.071	MPOST	0	13	0	70	85	6496
	1.0	MPOST						
RH-149109	0.071	PREFL						
18 RH-149109 + thiobencarb <i>fb</i>	0.035	MPOST	0	5	0	28	87	7181
	3.0	MPOST						
RH-149109	0.035	PREFL						
19 RH-149109 + thiobencarb <i>fb</i>	0.053	MPOST	0	6	0	60	86	7437
	3.0	MPOST						
RH-149109	0.053	PREFL						
20 RH-149109 + thiobencarb <i>fb</i>	0.071	MPOST	0	13	0	70	84	6865
	3.0	MPOST						
RH-149109	0.071	PREFL						
LSD (0.05)			0	10	0	18	2	1306

Table 12. Bispyribac-sodium programs with carfentrazone-ethyl and fenoxaprop + isoxadifen, Stuttgart, 2000.**SUMMARY**

Bispyribac-sodium (Regiment) was evaluated at 0.0192 lb ai/A at the 4- to 5- leaf rice stage and postflood application timings. Herbicide programs included propanil (Stam M-4) at 3.0 lb ai/A applied to 2- to 3-leaf rice followed by bispyribac-sodium, carfentrazone-ethyl (Aim), or bispyribac-sodium + carfentrazone-ethyl at the postflood timing. Bispyribac-sodium was also evaluated in a tank mixture with fenoxaprop + safener (Ricestar) on 4- to 5-leaf rice.

No rice injury was observed with any bispyribac-sodium treatments. Control of propanil-resistant and -susceptible barnyardgrass at the end of the season was >80% with all bispyribac-sodium treatments. Control of pitted and tall morningglory was obtained only with programs containing quinclorac or carfentrazone-ethyl. All programs, except fenoxaprop + safener applied alone, controlled >83% of northern jointvetch and > 95% of hemp sesbania.

TEST INFORMATION

Location	Stuttgart	Planting date	May 18, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 14, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: EPOST = early postemergence; MPOST = midpostemergence; PREFL = pre-flood; and POFL = postflood.

Application type	EPOST	MPOST	PREFL	POFL
Date applied	June 2, 2000	June 12, 2000	June 19, 2000	July 5, 2000
Time	2:30 pm	7:00 pm	10:00 am	2:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	95 / 92	84 / 84	93 / 84	95 / 88
Relative humidity (%)	45	62	85	89
Wind (mph)	2	3	1	2
Cloud cover (%)	15	40	50	30
Soil moisture	adequate	adequate	adequate	flooded
Crop stage/Height	2 lf / 5"	4 lf / 8"	5-1 lf / 11"	7-8 lf / 18"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 11001
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18	16 / 3 / 18
Gpa / Psi	10 / 24	10 / 22	10 / 25	10 / 30
Weed species (density)	-----[# leaves/height (in.)]-----			
R-ECHCG (20/ft in row)	1-2 lf / 1-2"	4-5 lf / 4-5"	5 lf / 8-9"	7-8 lf / 13-15"
S-ECHCG (20/ft in row)	1 lf / 1-2"	4 lf / 3-4"	5-6 lf / 7-9"	6-7 lf / 13-14"
BRAPP (14/ft in row)	1-2 lf / 2"	3-4 lf / 3-4"	6-7 lf / 4-6"	8-11 lf / 8-9"
IPOLA (10/ft in row)	2 lf / 2"	5-6 lf / 5-6"	6-7 lf / 6-8"	15+ lf / 9-11"
PHBPU (10/ft in row)	2 lf / 2"	4-5 lf / 5"	6-7 lf / 6-7"	10-12 lf / 9-11"
AESVI (3/ft in row)	1-2 lf / 2-3"	3-4 lf / 2-3"	5 lf / 6-7"	10-12 lf / 9-11"
SEBEX (30/ft in row)	2-3 lf / 3-4"	6 lf / 8-10"	8-10 lf / 10"	11-13 lf / 15-18"

Table 12. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Weed control									
			Barnyardgrass						Broadleaf signalgrass (BRAPP)			
			Sus. (S-ECHCG)			Resistant (R-ECHCG)			6/15	7/16	8/17	
			6/15	7/16	8/17	6/15	7/16	8/17	6/15	7/16	8/17	
----- (%) -----												
1	Untreated check		0	0	0	0	0	0	0	0	0	0
2	Propanil <i>fb</i>	3.0	EPOST	50	88	91	0	58	88	30	23	18
	bispyribac-sodium	0.019	POFL									
	+ Kinetic	0.125%	POFL									
3	Propanil <i>fb</i>	3.0	EPOST	56	75	90	0	55	85	45	46	48
	bispyribac-sodium +	0.019	POFL									
	carfentrazone +	0.02	POFL									
	Kinetic	0.125%	POFL									
4	Propanil <i>fb</i>	3.0	EPOST	68	65	90	0	59	94	50	35	8
	bispyribac-sodium +	0.019	POFL									
	carfentrazone +	0.03	POFL									
	Kinetic	0.125%	POFL									
5	Propanil <i>fb</i>	3.0	EPOST	15	18	18	0	10	20	15	23	28
	carfentrazone +	0.02	POFL									
	Kinetic	0.125%	POFL									
6	Propanil <i>fb</i>	3.0	EPOST	63	10	18	0	13	20	35	28	20
	carfentrazone +	0.03	POFL									
	Kinetic	0.125%	POFL									
7	Bispyribac-sodium +	0.019	MPOST	0	83	84	0	79	80	0	33	28
	Kinetic	0.125%	MPOST									
8	Bispyribac-sodium +	0.019	MPOST	0	75	80	0	60	58	0	63	80
	(fenoxaprop +											
	safener) +	0.067	MPOST									
	Kinetic	0.125%	MPOST									
9	Bispyribac-sodium +	0.019	MPOST	0	78	90	0	69	80	0	56	88
	(fenoxaprop +											
	safener) +	0.033	MPOST									
	Kinetic	0.125%	MPOST									
10	(Fenoxaprop +											
	safener) +	0.067	MPOST	0	96	91	0	97	94	0	98	100
	Agri-Dex	1%	MPOST									
11	(Fenoxaprop +											
	safener) +	0.033	MPOST	0	35	66	0	32	48	0	94	95
	Agri-Dex	1%	MPOST									
12	Propanil +	3.0	EPOST	100	100	96	91	98	90	96	100	100
	quinclorac <i>fb</i>	0.25	EPOST									
	propanil +	3.0	PREFL									
	triclopyr	0.25	PREFL									
13	Propanil +	3.0	EPOST	66	100	99	45	99	100	65	100	100
	pendimethalin <i>fb</i>	1.0	EPOST									
	quinclorac +	0.375	PREFL									
	propanil	3.0	PREFL									
LSD (0.05)				15	16	9	6	15	16	16	20	16

continued

Table 12. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control								
			Tall morningglory (PHBPU)		Pitted morningglory (IPOLA)			Northern jointvetch (AESVI)			
			6/15	7/16	6/15	7/16	8/17	6/15	7/16	8/17	
			----- (%) -----								
1	Untreated Check		0	0	0	0	0	0	0	0	0
2	Propanil <i>fb</i> bispyribac-sodium + 0.019 Kinetic	3.0 EPOST POFL POFL	0	18	0	18	8	89	89	100	
3	Propanil <i>fb</i> bispyribac-sodium + 0.019 carfentrazone + Kinetic	3.0 EPOST POFL POFL POFL	0	69	0	66	100	95	94	100	
4	Propanil <i>fb</i> bispyribac-sodium + 0.019 carfentrazone + Kinetic	3.0 EPOST POFL POFL POFL	0	75	0	74	100	96	91	100	
5	Propanil <i>fb</i> carfentrazone + Kinetic	3.0 EPOST POFL POFL	0	65	0	63	93	91	77	84	
6	Propanil <i>fb</i> carfentrazone + Kinetic	3.0 EPOST POFL POFL	0	61	0	55	88	81	86	96	
7	Bispyribac-sodium + Kinetic	0.019 MPOST MPOST	0	13	0	13	10	95	81	95	
8	Bispyribac-sodium + (fenoxaprop + safener) + Kinetic	0.019 MPOST MPOST MPOST	0	13	0	13	10	96	88	95	
9	Bispyribac-sodium + (fenoxaprop + safener) + Kinetic	0.019 MPOST MPOST MPOST	0	18	0	18	10	95	91	100	
10	(Fenoxaprop + safener) + Agri-Dex	0.067 MPOST MPOST 1%	0	13	0	13	10	0	0	0	
11	(Fenoxaprop + safener) + Agri-Dex	0.033 MPOST MPOST 1%	0	11	0	11	10	1	0	0	
12	Propanil + quinclorac <i>fb</i> propanil + triclopyr	3.0 EPOST EPOST PREFL PREFL	91	100	85	100	100	100	100	100	
13	Propanil + pendimethalin <i>fb</i> quinclorac + propanil	3.0 EPOST EPOST PREFL PREFL	45	100	33	100	100	100	100	100	
LSD (0.05)			8	13	7	16	10	11	12	11	

continued

Table 12. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control			Effect on rice				Yield 9/14 (lb/A)
			Hemp sesbania (SEBEX)			Injury				
			6/15	7/16	8/17	6/8	6/15	6/26	7/11	
			------(%)-----							
1	Untreated Check		0	0	0	0	0	0	0	2142
2	Propanil <i>fb</i>	3.0 EPOST	100	94	100	0	0	0	0	4327
	bispyribac-sodium +	0.019 POFL								
	Kinetic	0.125% POFL								
3	Propanil <i>fb</i>	3.0 EPOST	100	98	100	0	0	0	0	4588
	bispyribac-sodium +	0.019 POFL								
	carfentrazone +	0.02 POFL								
	Kinetic	0.125% POFL								
4	Propanil <i>fb</i>	3.0 EPOST	99	98	100	0	0	0	0	5362
	bispyribac-sodium +	0.019 POFL								
	carfentrazone +	0.03 POFL								
	Kinetic	0.125% POFL								
5	Propanil <i>fb</i>	3.0 EPOST	99	94	95	0	0	0	0	4971
	carfentrazone +	0.02 POFL								
	Kinetic	0.125% POFL								
6	Propanil <i>fb</i>	3.0 EPOST	100	94	98	0	0	0	0	6367
	carfentrazone +	0.03 POFL								
	Kinetic	0.125% POFL								
7	Bispyribac-sodium +	0.019 MPOST	0	97	100	0	0	0	0	4258
	Kinetic	0.125% MPOST								
8	Bispyribac-sodium +	0.019 MPOST	0	99	100	0	0	0	0	5445
	(fenoxaprop + safener)	0.067 MPOST								
	+ Kinetic	0.125% MPOST								
9	Bispyribac-sodium +	0.019 MPOST	0	98	100	0	0	0	0	5791
	(fenoxaprop + safener)	0.033 MPOST								
	+ Kinetic	0.125% MPOST								
10	(Fenoxaprop + safener) +	0.067 MPOST	0	0	0	0	0	0	0	3521
	Agri-Dex	1% MPOST								
11	(Fenoxaprop + safener) +	0.033 MPOST	0	0	0	0	0	0	0	3646
	Agri-Dex	1% MPOST								
12	Propanil +	3.0 EPOST	100	100	100	0	0	0	0	7451
	quinclorac <i>fb</i>	0.25 EPOST								
	propanil +	3.0 PREFL								
	triclopyr	0.25 PREFL								
13	Propanil +	3.0 EPOST	100	100	100	0	0	0	0	7333
	pendimethalin <i>fb</i>	1.0 EPOST								
	quinclorac +	0.375 PREFL								
	propanil	3.0 PREFL								
LSD (0.05)			1	5	3	0	0	0	0	2825

Table 13. Potential use of allelopathic rice cultivars with reduced rates of herbicides, Stuttgart, 2000.**SUMMARY**

This experiment evaluated the potential use of allelopathic rice accessions in combination with reduced rates of rice herbicides for season-long weed control of barnyardgrass. PI 312777, Tequing, Rexmont, Lemont, and Drew cultivars were compared without herbicides and in combination with thiobencarb (Bolero) applied at a delayed preemergence timing at the reduced rates of 1 and 2 lb ai/A. Propanil (Stam M-4) at 2.0 lb ai/A was also evaluated at the 2- to 3-leaf rice stage.

PI 312777 and Tequing cultivars gave excellent control (>96%) of barnyardgrass without the use of herbicides. The addition of thiobencarb or propanil was not needed with these accessions. Rexmont and Lemont cultivars provided little control of barnyardgrass (<33%), and thiobencarb was needed to control this weed species. Drew showed some potential allelopathic effects; however, without herbicides barnyardgrass control was unacceptable (<72%), and a reduced rate of thiobencarb was needed.

TEST INFORMATION

Location	Stuttgart	Planting date	May 25, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 14, 2000
Plot size	6 ft x 10 ft	Crop / Variety	rice / many
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: DPRE = delayed preemergence; and EPOST = early postemergence.

Application type	DPRE	EPOST
Date applied	May 30, 2000	June 28, 2000
Time	7:00 am	8:00 am
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	74 / 78	72 / 75
Relative humidity (%)	65	90
Wind (mph)	3	2
Cloud cover (%)	0	100
Soil moisture	wet	dry
Crop stage/Height	N/A	2 lf / 5.5"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	22 / 3 / 18
Gpa / Psi	10 / 32	10 / 28
Weed species (density)	----- [# leaves/height (in.)] -----	
ECHCG (5-6/ft ²)	N/A	2-3 lf / 3-4"

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Table 13.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass (ECHCG) control				Rice yield
			6/25	7/11	8/17	9/16	10/15
			----- (%) -----				(lb/A)
PI 312777:							
1			87	76	86	97	5577
2	1.0	DPRE	100	97	99	100	5636
3	2.0	DPRE	100	98	100	100	6603
4	2.0	EPOST	94	94	93	98	6128
Tequing:							
5			96	95	92	99	8094
6	1.0	DPRE	97	97	97	100	7625
7	2.0	DPRE	100	99	100	100	6892
8	2.0	EPOST	96	91	92	98	6775
Lemont:							
9			19	49	31	34	2403
10	1.0	DPRE	68	49	63	58	3540
11	2.0	DPRE	95	70	89	94	5148
12	2.0	EPOST	68	58	66	66	3133
Rexmont:							
13			5	28	18	6	896
14	1.0	DPRE	70	55	43	51	3614
15	2.0	DPRE	73	45	43	39	2722
16	2.0	EPOST	15	30	20	8	1368
Drew:							
17			66	60	59	73	5030
18	1.0	DPRE	99	90	97	97	6203
19	2.0	DPRE	99	89	94	99	6770
20	2.0	EPOST	73	63	68	66	4896
LSD (0.05)			27	32	22	24	1603

Table 14. Cultivar sensitivity to clomazone, Stuttgart, 2000.**SUMMARY**

Rice cultivar sensitivity to some recommended rice herbicides has been shown in prior research. Clomazone (Command), is a new herbicide for rice, with the potential to be injurious early in the season. Twenty prominently grown rice cultivars were evaluated for their tolerance to clomazone applied preemergence at 0.3 and 0.6 lb ai/A (1 and 2 times the projected use-rate for this soil type).

Early-season chlorosis was more prevalent in all cultivars at 0.6 lb/A of clomazone than at 0.3 lb/A. Chlorosis of the rice cultivars RU9601096, Koshihikari, RU9801148, Wells, Kaybonnet, and Bengal ranged from 40 to 65% with 0.6 lb/A. Visual growth reduction and overall rice injury followed the same trend as chlorosis, with these same cultivars showing the highest amount of growth reduction from clomazone applied at 0.6 lb/A. Even though these cultivars had higher ratings for chlorosis, growth reduction, and overall rice injury, no significant yield differences were detected from treatments within a cultivar or among cultivars. From this research, there appeared to be early-season differences in overall tolerance to clomazone; however, this was not reflected by late-season observations or rice yield.

TEST INFORMATION

Location	Stuttgart	Planting date	May 24, 1999
Experimental Design / replications	RCB / 4	Harvest date	N/A
Plot size	6 ft by 16 ft	Crop / Variety	Rice / Many
Row width / Number of rows per plot	6.5 in. / 9 rows	Dates of flushing	May 30, June 9 and 13, 2000
Soil type ...	Dewitt silt loam (8% sand, 75% silt, 16% clay)	Date of flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: PRE = preemergence.

Application type	PRE
Date applied	May 25, 2000
Time	12:00 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	85 / 76
Relative humidity (%)	76
Wind (mph)	4
Weather	partly cloudy
Soil moisture	dry
Crop stage/Height	N/A
Sprayer type/mph	BkPkCO ₂ / 3
Nozzle type/Size	Teejet / 110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18
Gpa / Psi	10 / 30

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Table 14.

Herbicide	Application		Effect on rice									Yield (lb/A)
	Rate (lb/A)	timing	Chlorosis			Biomass reduction			Injury			
			6/8	6/16	6/22	6/8	6/16	6/22	6/8	6/16	6/22	
----- (%) -----												
Drew												
Untreated check			0	0	0	0	0	0	0	0	0	6560
Clomazone	0.3	PRE	15	4	4	1	2	0	2	2	0	8130
Clomazone	0.6	PRE	59	35	12	5	30	24	12	35	28	7670
Lemont												
Untreated check			0	0	0	0	0	0	0	0	0	7190
Clomazone	0.3	PRE	9	4	4	0	2	1	1	2	1	5910
Clomazone	0.6	PRE	58	29	10	6	26	21	11	31	25	6700
Priscilla												
Untreated check			0	0	0	0	0	0	0	0	0	7060
Clomazone	0.3	PRE	14	4	7	1	2	11	4	2	12	8540
Clomazone	0.6	PRE	58	30	8	8	25	15	14	31	16	7570
RU9701041												
Untreated check			0	0	0	0	0	0	0	0	0	7780
Clomazone	0.3	PRE	4	2	0	0	0	0	0	0	0	7030
Clomazone	0.6	PRE	55	12	6	5	11	11	10	14	11	6900
Madison												
Untreated check			0	0	0	0	0	0	0	0	0	5470
Clomazone	0.3	PRE	24	3	0	5	1	0	10	1	0	12780
Clomazone	0.6	PRE	51	38	15	6	29	22	12	34	26	6620
Cypress												
Untreated check			0	0	0	0	0	0	0	0	0	7390
Clomazone	0.3	PRE	15	4	2	4	2	0	5	2	0	7060
Clomazone	0.6	PRE	62	28	8	15	29	18	26	35	19	5820
Bengal												
Untreated check			0	0	0	0	0	0	0	0	0	6860
Clomazone	0.3	PRE	22	5	4	6	6	1	12	6	1	7640
Clomazone	0.6	PRE	70	45	18	20	42	29	32	51	35	6740
RU9801148												
Untreated check			0	0	0	0	0	0	0	0	0	7480
Clomazone	0.3	PRE	16	6	2	5	5	1	9	6	1	6230
Clomazone	0.6	PRE	68	40	20	25	44	35	36	51	40	7420
Kaybonnet												
Untreated check			0	0	0	0	0	0	0	0	0	7720
Clomazone	0.3	PRE	12	4	2	2	5	0	4	5	0	7950
Clomazone	0.6	PRE	61	51	14	12	38	26	21	44	31	7450
LaGrue												
Untreated check			0	0	0	0	0	0	0	0	0	8730
Clomazone	0.3	PRE	9	4	1	0	0	0	1	0	0	9180
Clomazone	0.6	PRE	52	30	14	6	24	19	11	29	21	9260
Wells												
Untreated check			0	0	0	0	0	0	0	0	0	6600
Clomazone	0.3	PRE	18	6	2	1	2	0	4	2	0	7630
Clomazone	0.6	PRE	68	44	20	12	68	26	22	44	31	8080
Mars												
Untreated check			0	0	0	0	0	0	0	0	0	9020
Clomazone	0.3	PRE	8	4	0	1	1	0	2	2	0	7660
Clomazone	0.6	PRE	56	30	18	12	30	29	19	35	26	7970

continued

Table 14. Continued.

Herbicide	Application		Effect on rice									Yield (lb/A)
	Rate (lb/A)	timing	Chlorosis			Biomass reduction			Injury			
			6/8	6/16	6/22	6/8	6/16	6/22	6/8	6/16	6/22	
			----- (%) -----									
Cocodrie												
Untreated check			0	0	0	0	0	0	0	0	0	7700
Clomazone	0.3	PRE	9	3	1	1	4	0	2	5	0	8030
Clomazone	0.6	PRE	64	38	12	12	31	20	18	36	22	8470
RU9801081												
Untreated check			0	0	0	0	0	0	0	0	0	6770
Clomazone	0.3	PRE	5	4	0	1	1	0	1	1	0	5920
Clomazone	0.6	PRE	54	35	9	6	29	25	14	32	28	5620
Koshihikari												
Untreated check			0	0	0	0	0	0	0	0	0	6340
Clomazone	0.3	PRE	36	6	4	9	5	2	14	5	2	7630
Clomazone	0.6	PRE	40	39	28	9	51	50	19	58	52	8090
RU9601096												
Untreated check			0	0	0	0	0	0	0	0	0	7640
Clomazone	0.3	PRE	29	18	6	12	20	9	21	21	9	7430
Clomazone	0.6	PRE	82	65	32	39	74	71	56	76	75	7600
Jefferson												
Untreated check			0	0	0	0	0	0	0	0	0	6350
Clomazone	0.3	PRE	6	4	0	1	0	0	1	0	0	6670
Clomazone	0.6	PRE	44	29	9	8	16	12	12	21	12	6640
RU9901030												
Untreated check			0	0	0	0	0	0	0	0	0	7150
Clomazone	0.3	PRE	8	4	4	4	2	0	2	2	0	7710
Clomazone	0.6	PRE	64	41	15	14	31	20	20	38	22	8540
LSD for comparing among herbicide treatments for same cultivar			23	13	7	8	8	12	10	8	14	NS
LSD for comparing among herbicide treatments for different cultivars			18	13	7	7	8	11	10	8	13	NS

Table 15. Intermittent irrigation in rice, Stuttgart, 2000.

SUMMARY

This experiment evaluated the effects of minimizing the amount of water used throughout the growing season, to the point of not maintaining flooding, on weed control and various rice growth and yield parameters with several standard herbicide programs. Each replication was split into six different bays with irrigation regimes based on different soil moisture contents. The amount of time between the initial loss of the flood until reflooding occurred was varied. Initially all bays were flooded the same day and to the same depth. The flood in each bay was allowed to drop except in those bays designated as permanent flood. When the soil reached the target volumetric water content in each bay, the flood was reintroduced. This allowed for various wetting and drying periods that would simulate a loss of flood for varying intervals in a grower field.

There was no interaction between water management and herbicide treatment. Water management did not affect rice chlorosis from clomazone, visual growth reduction, or injury, and the only differences were due to herbicide treatment. Propanil-resistant and -susceptible barnyardgrass control was >97% for all treatments except thiobencarb (Bolero) followed by fenoxaprop + safener (Ricestar), which gave 84% control, and propanil followed by quinclorac (Facet) + propanil which gave 89% control. Broadleaf signalgrass control followed the same general trends as barnyardgrass control. Rice yield was not affected by any of the herbicide treatments except thiobencarb followed by fenoxaprop + safener. Water management affected rice yield only at the lowest volumetric content of 20%, which resulted in lower yields than the higher water contents, and yield from those bays designated as permanent flood.

TEST INFORMATION

Location	Stuttgart	Planting date	May 18, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 14, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Wells
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	May 25 and 30, June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of initial flooding	June 27, 2000
% OM / pH	0.94 / 7.3		

Comments: PRE = preemergence; EPOST = early postemergence; PREFL = pre-flood; POFL-1 = 1 week after initial flood; and POFL-2 = 3 weeks after initial flood.

Application type	PRE	EPOST	PREFL	POFL-1	POFL-2
Date applied	May 18, 2000	June 2, 2000	June 19, 2000	July 5, 2000	July 19, 2000
Time	9:00 pm	1:00 pm	10:00 am	3:00 pm	6:30 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	95 / 92	86 / 84	95 /	96 /
Relative humidity (%)	83	55	85	86	95
Wind (mph)	3	2	1	2	3
Cloud cover (%)	20	35	50	40	35
Soil moisture	dry	moist	wet		
Crop stage/Height	N/A	2-3 lf / 5"	5-6 lf / 12"	8-9 lf / 28"	10-12 lf / 28"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht/# Noz/Spacing (in.)	15 / 3 / 18	21 / 3 / 18	27 / 3 / 18	44 / 3 / 18	44 / 3 / 18
Gpa / Psi	10 / 30	10 / 28	10 / 28	10 / 28	10 / 28
Weed species (density)			[# leaves/height (in.)]		
R-ECHCG (20/ft in row)	N/A	2-3 lf / 1.5"	6 lf / 8-10"	8-10 lf / 13-15"	8-10 lf / 15-16"
S-ECHCG (15/ft in row)	N/A	2 lf / 1.5"	5-6 lf / 8-10"	8-10 lf / 14-16"	8-10 lf / 14-16"
BRAPP (15/ft ²)	N/A	2-3 lf / 1.5"	6-7 lf / 8-10"	10-12 lf / 15-17"	8-10 lf / 15-17"

Table 15. Section 1.

Herbicide	Rate	Application timing (lb ai/A)	Barnyardgrass control							
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)			
			6/8	6/22	7/18	8/17	6/8	6/22	7/18	8/17
			----- (%) -----							
Permanent flood:										
1		Untreated check	0	0	0	0	0	0	0	0
2	0.3	Clomazone PRE	100	94	99	100	100	94	99	100
3	0.6	Clomazone PRE	100	100	100	100	100	100	100	100
4	0.375	Quinclorac PRE	100	100	100	100	100	100	100	99
5	1.0	Pendimethalin <i>fb</i> (fenoxaprop + safener)	100	100	100	99	100	100	87	85
6	4.0	Thiobencarb <i>fb</i> (fenoxaprop + safener)	98	69	65	95	98	63	73	85
7	4.0	Propanil <i>fb</i> EPOST	59	68	70	86	30	3	54	68
	4.0	propanil + PREFLD								
	0.375	quinclorac PREFLD								
Reeflood at 48% soil moisture:										
8		Untreated check	0	0	0	0	0	0	0	0
9	0.3	Clomazone PRE	100	100	83	99	100	99	96	99
10	0.6	Clomazone PRE	100	100	100	100	100	100	100	100
11	0.375	Quinclorac PRE	100	100	100	100	100	100	100	100
12	1.0	Pendimethalin <i>fb</i> (fenoxaprop + safener)	100	98	78	95	100	98	79	94
13	4.0	Thiobencarb <i>fb</i> (fenoxaprop + safener)	97	55	79	82	97	68	90	75
14	4.0	Propanil <i>fb</i> EPOST	69	56	96	86	25	3	43	55
	4.0	propanil + PREFLD								
	0.375	quinclorac PREFLD								
Reeflood at 41% soil moisture:										
15		Untreated check	0	0	0	0	0	0	0	0
16	0.3	Clomazone PRE	100	100	99	96	100	100	99	97
17	0.6	Clomazone PRE	100	100	100	100	100	100	100	100
18	0.375	Quinclorac PRE	100	100	99	100	100	100	99	100
19	1.0	Pendimethalin <i>fb</i> (fenoxaprop + safener)	100	100	99	99	100	100	99	97
20	4.0	Thiobencarb <i>fb</i> (fenoxaprop + safener)	100	56	75	81	98	70	84	63
21	4.0	Propanil <i>fb</i> EPOST	50	60	83	84	23	3	53	60
	4.0	propanil + PREFLD								
	0.375	quinclorac PREFLD								

continued

Table 15. Section 1. Continued.

Herbicide	Rate	Application timing (lb ai/A)	Barnyardgrass control							
			Susceptible (S-ECHCG)				Resistant (R-ECHCG)			
			6/8	6/22	7/18	8/17	6/8	6/22	7/18	8/17
			----- (%) -----							
Reflood at 34% soil moisture:										
22	Untreated check		0	0	0	0	0	0	0	0
23	Clomazone	0.3 PRE	100	100	98	95	100	100	95	83
24	Clomazone	0.6 PRE	100	100	100	100	100	100	100	100
25	Quinclorac	0.375 PRE	100	100	99	97	100	100	99	92
26	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	100	100	96	97	100	100	96	95
27	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	98	54	65	80	98	65	76	66
28	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	72	54	92	96	39	2	52	45
Reflood at 27% soil moisture:										
29	Untreated check		0	0	0	0	0	0	0	0
30	Clomazone	0.3 PRE	90	96	99	98	100	100	93	92
31	Clomazone	0.6 PRE	100	100	100	99	100	100	100	100
32	Quinclorac	0.375 PRE	100	100	99	98	100	100	95	95
33	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	100	100	96	96	100	100	95	92
34	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	96	44	64	91	97	46	75	60
35	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	78	59	90	97	28	23	48	45
Reflood at 20% soil moisture:										
36	Untreated check		0	13	0	15	0	3	0	10
37	Clomazone	0.3 PRE	100	96	97	97	100	99	97	82
38	Clomazone	0.6 PRE	100	100	100	99	100	100	100	100
39	Quinclorac	0.375 PRE	100	100	100	99	100	100	100	87
40	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	100	99	94	97	100	99	94	92
41	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	98	58	68	76	98	66	71	55
42	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	61	58	91	91	24	0	56	43
LSD to compare main effect of water treatments			5	6	8	6	4	6	8	14
LSD To compare main effect of herbicide treatments			4	6	7	5	4	5	7	8

continued

Table 15. Section 2.

Herbicide	Rate	Application timing (lb ai/A)	Broadleaf signalgrass (BRAPP) control				Effect on rice					
			6/8	6/22	7/18	8/17	Chlorosis			Biomass reduction		
							6/1	6/8	6/16	6/16	6/22	7/11
						----- (%) -----						
Permanent flood:												
1		Untreated check	0	0	0	0	0	0	0	0	0	0
2	0.3	PRE	100	91	100	99	0	2	0	0	0	0
3	0.6	PRE	100	100	100	98	5	44	5	0	0	0
4	0.375	PRE	100	100	100	100	0	0	0	0	0	0
5	1.0	DPRE	95	85	98	93	0	0	0	0	0	0
	0.08	POFL-2										
6	4.0	DPRE	90	51	74	54	0	0	0	0	0	0
	0.08	POFL-1										
7	4.0	EPOST	80	64	75	80	0	0	0	0	0	0
	4.0	PREFLD										
	0.375	PREFLD										
Reflood at 48% soil moisture:												
8		Untreated check	0	0	0	0	0	0	0	0	0	0
9	0.3	PRE	75	100	96	92	0	1	0	0	0	0
10	0.6	PRE	100	100	100	100	7	49	6	0	0	0
11	0.375	PRE	100	100	100	100	0	0	0	0	0	0
12	1.0	DPRE	100	81	81	84	0	0	0	0	0	0
	0.08	POFL-2										
13	4.0	DPRE	91	44	74	67	0	0	0	0	0	0
	0.08	POFL-1										
14	4.0	EPOST	76	49	95	93	0	0	0	0	0	0
	4.0	PREFLD										
	0.375	PREFLD										
Reflood at 41% soil moisture:												
15		Untreated check	0	0	0	0	0	0	0	0	0	0
16	0.3	PRE	99	98	90	69	0	2	0	0	0	0
17	0.6	PRE	100	100	100	100	2	35	5	0	0	0
18	0.375	PRE	100	100	100	100	0	0	0	0	0	0
19	1.0	DPRE	100	93	96	95	0	0	0	0	0	0
	0.08	POFL-2										
20	4.0	DPRE	96	54	68	30	0	0	0	0	0	0
	0.08	POFL-1										
21	4.0	EPOST	79	53	97	97	0	0	0	0	0	0
	4.0	PREFLD										
	0.375	PREFLD										

continued

Table 15. Section 2. Continued.

Herbicide	Rate	Application timing (lb ai/A)	Broadleaf signalgrass (BRAPP) control				Effect on rice					
			6/8	6/22	7/18	8/17	Chlorosis			Biomass reduction		
							6/1	6/8	6/16	6/16	6/22	7/11
						----- (%) -----						
Reflood at 34% soil moisture:												
22	Untreated check		0	0	0	0	0	0	0	0	0	0
23	Clomazone	0.3 PRE	100	100	97	82	1	3	1	0	0	0
24	Clomazone	0.6 PRE	100	100	99	100	6	50	8	0	0	0
25	Quinclorac	0.375 PRE	100	100	99	98	1	0	0	0	0	0
26	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	100	95	88	82	0	0	0	0	0	0
27	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	89	48	60	28	0	0	0	0	0	0
28	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	60	43	85	75	0	0	0	0	0	0
Reflood at 27% soil moisture:												
29	Untreated check		0	0	0	0	0	0	0	0	0	0
30	Clomazone	0.3 PRE	100	100	98	92	0	0	0	0	0	0
31	Clomazone	0.6 PRE	100	100	100	100	5	44	6	0	0	0
32	Quinclorac	0.375 PRE	100	100	99	100	0	0	0	0	0	0
33	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	96	88	80	85	0	0	0	0	0	0
34	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	86	38	65	35	0	0	0	0	0	0
35	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	80	58	96	88	0	0	0	0	0	0
Reflood at 20% soil moisture:												
36	Untreated check		0	10	0	10	0	0	0	0	0	0
37	Clomazone	0.3 PRE	100	98	91	68	2	2	0	0	0	0
38	Clomazone	0.6 PRE	100	100	100	97	1	30	5	0	0	0
39	Quinclorac	0.375 PRE	100	100	99	97	0	0	0	0	0	0
40	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	97	74	64	76	0	0	0	0	0	0
41	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	99	64	74	38	0	0	0	0	0	0
42	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	80	61	96	88	0	0	0	0	0	0
LSD to compare main effect of water treatments			8	8	8	11	7	9	2	NS	NS	NS
LSD to compare main effect of herbicide treatments			6	8	8	9	3	5	1	NS	NS	NS

continued

Table 15. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice					
			Injury			Yield	Panicle height	Harvest index
			6/1	6/8	6/16	9/27	9/27	9/26
			----- (%) -----			(lb/A)	(cm)	
Permanent flood:								
1	Untreated check		0	0	0	6256	86	43
2	Clomazone	0.3 PRE	0	0	0	8468	84	49
3	Clomazone	0.6 PRE	0	1	0	9211	92	52
4	Quinclorac	0.375 PRE	0	3	0	10027	90	54
5	Pendimethalin <i>fb</i>	1.0 DPRE	0	0	0	8612	86	49
	(fenoxaprop + safener)	0.08 POFL-2						
6	Thiobencarb <i>fb</i>	4.0 DPRE	0	0	0	8540	86	50
	(fenoxaprop + safener)	0.08 POFL-1						
7	Propanil <i>fb</i>	4.0 EPOST	0	0	0	8627	88	48
	propanil +	4.0 PREFLD						
	quinclorac	0.375 PREFLD						
Refflood at 48% soil moisture:								
8	Untreated check		0	0	0	4698	84	39
9	Clomazone	0.3 PRE	0	0	0	8232	89	49
10	Clomazone	0.6 PRE	0	3	0	9467	88	41
11	Quinclorac	0.375 PRE	0	3	0	8905	90	49
12	Pendimethalin <i>fb</i>	1.0 DPRE	0	0	0	8552	86	49
	(fenoxaprop + safener)	0.08 POFL-2						
13	Thiobencarb <i>fb</i>	4.0 DPRE	0	0	0	7957	87	57
	(fenoxaprop + safener)	0.08 POFL-1						
14	Propanil <i>fb</i>	4.0 EPOST	0	0	0	9222	89	49
	propanil +	4.0 PREFLD						
	quinclorac	0.375 PREFLD						
Refflood at 41% soil moisture:								
15	Untreated check		0	0	0	3476	78	44
16	Clomazone	0.3 PRE	0	0	0	8602	88	54
17	Clomazone	0.6 PRE	0	1	0	8399	87	49
18	Quinclorac	0.375 PRE	0	4	0	9371	89	58
19	Pendimethalin <i>fb</i>	1.0 DPRE	0	0	0	7804	87	49
	(fenoxaprop + safener)	0.08 POFL-2						
20	Thiobencarb <i>fb</i>	4.0 DPRE	0	1	0	8384	87	53
	(fenoxaprop + safener)	0.08 POFL-1						
21	Propanil <i>fb</i>	4.0 EPOST	0	0	0	8352	88	50
	propanil +	4.0 PREFLD						
	quinclorac	0.375 PREFLD						

continued

Herbicide Evaluation in Arkansas Rice, 2000

Table 15. Section 3. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice					
			Injury			Yield	Panicle height	Harvest index
			6/1	6/8	6/16	9/27	9/27	9/26
			----- (%) -----			(lb/A)	(cm)	
Reflood at 34% soil moisture:								
22	Untreated check		0	0	0	3189	80	39
23	Clomazone	0.3 PRE	0	0	0	8929	91	50
24	Clomazone	0.6 PRE	0	5	0	8394	91	47
25	Quinclorac	0.375 PRE	0	4	0	7962	92	55
26	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	0	0	0	8644	88	47
27	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	0	0	0	7165	87	47
28	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	0	0	0	9422	91	54
Reflood at 27% soil moisture:								
29	Untreated check		0	0	0	6086	81	45
30	Clomazone	0.3 PRE	0	0	0	8105	84	49
31	Clomazone	0.6 PRE	0	4	0	7911	87	47
32	Quinclorac	0.375 PRE	0	2	0	7923	86	48
33	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	0	0	0	6987	83	53
34	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	0	0	0	6678	82	45
35	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	0	0	0	7602	88	55
Reflood at 20% soil moisture:								
36	Untreated check		0	0	0	3404	79	44
37	Clomazone	0.3 PRE	0	0	0	5516	81	42
38	Clomazone	0.6 PRE	0	0	0	5306	80	41
39	Quinclorac	0.375 PRE	0	1	0	4795	81	38
40	Pendimethalin <i>fb</i> (fenoxaprop + safener)	1.0 DPRE 0.08 POFL-2	0	0	0	5456	83	44
41	Thiobencarb <i>fb</i> (fenoxaprop + safener)	4.0 DPRE 0.08 POFL-1	0	0	0	4330	80	32
42	Propanil <i>fb</i> propanil + quinclorac	4.0 EPOST 4.0 PREFLD 0.375 PREFLD	0	0	0	4916	83	43
	LSD to compare main effect of water treatments		NS	NS	NS	1696	5	4
	LSD to compare main effect of herbicide treatments		NS	NS	NS	760	2	4

Table 16. Liberty-tolerant rice. Stuttgart, 2000.

SUMMARY

Glufosinate (Liberty) was evaluated at 0.186, 0.312, or 0.356 lb ai/A in a sequential program applied at the 2- to 3-leaf and 4- to 6-leaf rice stage. Glufosinate was also evaluated in a program approach with clomazone (Command) or quinclorac (Facet) applied preemergence. Glufosinate at 0.183 was also evaluated at the 2- to 3-leaf stage *fb* the 4- to 6-leaf stage applied alone and in combination with AMS, Class Act, C19804, Placement ProPak, Corral AMS, ARray, Class Act II, or AG-98.

A program approach with either clomazone or quinclorac followed by glufosinate or with sequential applications of glufosinate was needed to control broadleaf signalgrass and propanil-resistant and -susceptible barnyardgrass. Either program was also effective for control of pitted morningglory, tall morningglory, northern jointvetch, hemp sesbania, and bearded sprangletop. Overall, no benefit was seen using one adjuvant system over another for this weed spectrum.

Indirect comparisons with other rice cultivars in 2000 indicate a tendency for more early-season rice chlorosis to be observed when clomazone is used in glufosinate-tolerant Bengal than with conventional cultivars.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	September 21, 2000
Plot size	6 ft x 16 ft	Crop / Variety	rice / Liberty Bengal
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: PRE = preemergence; DPRE = delayed preemergence; 2-3 LF = 2- to 3-leaf rice; EPOST = early postemergence; and PREFL = pre-flood.

Application type	PRE	2-3 LF	EPOST	PREFL
Date applied	May 18, 2000	May 22, 2000	June 2, 2000	June 19, 2000
Time	10:00 am	4:30 pm	2:30 pm	10:00 am
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	88 / 77	95 / 92	93 / 84
Relative humidity (%)	83	84	42	85
Wind (mph)	3	4	2	1
Cloud cover (%)	20	100	15	50
Soil moisture	adequate	adequate	adequate	adequate
Crop stage/Height	N/A	N/A	2-3 lf / 5.5"	5-6 lf / 10"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet / DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	16 / 3 / 18	21 / 3 / 18	29 / 3 / 18
Gpa / Psi	10 / 30	10 / 25	10 / 30	10 / 28
Weed species (density)	-----[# leaves/height (in.)]-----			
S-ECHCG (13/ft in row)	N/A	N/A	1-2 lf / 1"	3-4 lf / 2-3"
R-ECHCG (20/ft in row)	N/A	N/A	1-2 lf / 1-1.5"	4-5 lf / 8-9"
N-ECHCG (8-10/ft ²)	N/A	N/A	2 lf / 1.5-2"	4-5 lf / 8-9"
BRAPP (18/ft in row)	N/A	N/A	2 lf / 1-2"	4 lf / 3-4 in
IPOLA (15/ft in row)	N/A	N/A	2-3 lf / 1.5-2"	7-9 lf / 6-7"
PHBPU (12/ft in row)	N/A	N/A	2-3 lf / 1.5"	6-8 lf / 6-8"
AESVI (4/ft in row)	N/A	N/A	1-2 lf / 2"	7-8 lf / 5-7"
SEBEX (40/ft in row)	N/A	N/A	2-3 lf / 4"	8-10 lf / 10-12"
LEFPA (0.1/ft ²)	N/A	N/A	N/A	1 lf / 0.5"

Table 16. Section 1.

Herbicide	Application Rate timing (lb ai/A)		Barnyardgrass control								
			Natural (N-ECHCG)			Susceptible (S-ECHCG)			Resistant (R-ECHCG)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
			----- (%) -----								
1	Untreated check		0	0	0	0	0	0	0	0	0
2	Glufosinate <i>fb</i>	0.312 2-3 LF	76	100	100	79	100	100	80	100	100
	glufosinate	0.267 PREFL									
3	Glufosinate <i>fb</i>	0.312 2-3 LF	70	100	100	66	100	100	60	100	100
	glufosinate	0.223 PREFL									
4	Glufosinate <i>fb</i>	0.356 2-3 LF	88	95	100	83	100	100	74	100	100
	glufosinate	0.178 PREFL									
5	Pendimethalin <i>fb</i>	1.0 DPRE	98	99	100	100	100	100	100	100	100
	glufosinate	0.312 PREFL									
6	Propanil <i>fb</i>	4.0 2-3 LF	54	100	100	65	100	100	55	100	100
	glufosinate	0.312 PREFL									
7	Quinclorac +	0.375 2-3 LF	95	100	100	98	100	100	98	100	100
	AG-98 <i>fb</i>	0.25% 2-3 LF									
	glufosinate	0.312 PREFL									
8	Clomazone <i>fb</i>	0.4 PRE	100	96	100	100	100	100	100	100	100
	glufosinate	0.312 PREFL									
9	Glufosinate +	0.312 2-3 LF	93	61	64	93	83	64	86	59	46
	(propanil + molinate)	5.35 2-3 LF									
10	Glufosinate +	0.312 2-3 LF	80	54	45	80	79	40	78	60	33
	bentazon	0.75 2-3 LF									
11	Glufosinate +	0.312 2-3 LF	87	55	63	92	78	63	90	61	65
	halosulfuron +	0.0312 2-3 LF									
	AG-98	0.25% 2-3 LF									
12	Clomazone +	0.3 PRE	100	100	100	100	100	100	100	100	100
	quinclorac <i>fb</i>	0.19 PRE									
	(propanil + molinate)	4.5 PREFL									
13	Quinclorac <i>fb</i>	0.375 PRE	97	94	99	97	100	99	99	100	100
	propanil (Stam M-4)	4.0 PREFL									
14	Glufosinate <i>fb</i>	0.183 2-3 LF	65	88	99	69	100	99	55	100	100
	glufosinate	0.183 PREFL									
15	Glufosinate +	0.183 2-3 LF	68	89	97	64	100	97	55	100	85
	AMS <i>fb</i>	3.0 2-3 LF									
	glufosinate +	0.183 PREFL									
	AMS	3.0 PREFL									
16	Glufosinate +	0.183 2-3 LF	71	88	99	83	100	99	86	100	100
	Class Act <i>fb</i>	2.5 2-3 LF									
	glufosinate +	0.183 PREFL									
	Class Act	2.5 PREFL									
17	Glufosinate +	0.183 2-3 LF	55	90	99	68	100	99	48	100	100
	CL9804 <i>fb</i>	1.0 2-3 LF									
	glufosinate +	0.183 PREFL									
	CL9804	1.0 PREFL									
18	Glufosinate +	0.183 2-3 LF	55	91	99	54	100	99	58	100	99
	Placement Pro-Pak	1.0 2-3 LF									
	<i>fb</i> glufosinate +	0.183 PREFL									
	Placement Pro-Pak	1.0 PREFL									
19	Glufosinate +	0.183 2-3 LF	59	88	98	55	100	98	54	100	99
	Corral AMS <i>fb</i>	2.5 2-3 LF									
	glufosinate +	0.183 PREFL									
	Corral AMS	2.5 PREFL									

continued

Table 16. Section 1. Continued.

Herbicide	Application Rate timing (lb ai/A)		Barnyardgrass control								
			Natural (N-ECHCG)			Susceptible (S-ECHCG)			Resistant (R-ECHCG)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
----- (%) -----											
20	Glufosinate + Array <i>fb</i>	0.183 2-3 LF 1.4 2-3 LF	58	85	99	58	100	99	65	100	100
	glufosinate + Array	0.183 PREFL 1.4 PREFL									
21	Glufosinate + Class Act II <i>fb</i>	0.183 2-3 LF 2.5 2-3 LF	75	94	98	79	100	98	75	100	99
	glufosinate <i>fb</i> Class Act II	0.183 PREFL 2.5 PREFL									
22	Glufosinate + AG-98 <i>fb</i>	0.183 2-3 LF 0.25% 2-3 LF	66	100	100	61	100	100	54	100	100
	glufosinate + AG-98	0.183 PREFL 0.25% PREFL									
23	Glufosinate <i>fb</i> glufosinate	0.365 2-3 LF 0.365 PREFL	78	98	100	80	100	100	79	100	100
LSD (0.05)			21	10	12	21	9	12	22	12	13

continued

Table 16. Section 2.

Herbicide	Application Rate timing (lb ai/A)		Weed control								
			Broadleaf signalgrass (BRAPP)			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)		
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16
----- (%) -----											
1	Untreated check		0	0	0	0	0	0	0	0	0
2	Glufosinate <i>fb</i> glufosinate	0.312 2-3 LF 0.267 PREFL	82	100	100	20	100	100	25	100	100
3	Glufosinate <i>fb</i> glufosinate	0.312 2-3 LF 0.223 PREFL	64	100	100	33	100	100	34	100	100
4	Glufosinate <i>fb</i> glufosinate	0.356 2-3 LF 0.178 PREFL	78	100	100	30	100	100	39	100	100
5	Pendimethalin <i>fb</i> glufosinate	1.0 DPRE 0.312 PREFL	95	100	100	18	100	100	20	100	100
6	Propanil <i>fb</i> glufosinate	4.0 2-3 LF 0.312 PREFL	79	100	100	25	100	100	34	100	100
7	Quinclorac + AG-98 <i>fb</i> glufosinate	0.375 2-3 LF 0.25% 2-3 LF 0.312 PREFL	100	100	100	46	100	100	86	100	100
8	Clomazone <i>fb</i> glufosinate	0.4 PRE 0.312 PREFL	100	100	100	23	100	100	31	100	100
9	Glufosinate + (propanil + molinate)	0.312 2-3 LF 5.35 2-3 LF	90	100	65	50	55	20	60	63	28
10	Glufosinate + bentazon	0.312 2-3 LF 0.75 2-3 LF	80	100	38	28	69	25	31	69	25
11	Glufosinate + halosulfuron + AG-98	0.312 2-3 LF 0.0312 2-3 LF 0.25% 2-3 LF	86	100	64	49	76	39	43	76	30

continued

Table 16. Section 2. Continued.

Herbicide	Application		Weed control									
	Rate (lb ai/A)	timing	Broadleaf signalgrass (BRAPP)			Pitted morningglory (IPOLA)			Tall morningglory (PHBPU)			
			6/15	7/11	/16	6/15	7/11	8/16	6/15	7/11	8/16	
			----- (%) -----									
12	Clomazone + quinclorac <i>fb</i> (propanil + molinate)	0.3 0.19 4.5	PRE PRE PREFL	100	100	100	94	100	100	100	100	100
13	Quinclorac <i>fb</i> propanil (Stam M-4)	0.375 4.0	PRE PREFL	100	100	100	95	100	100	100	100	100
14	Glufosinate <i>fb</i> glufosinate	0.183 0.183	2-3 LF PREFL	55	100	100	18	100	100	25	100	100
15	Glufosinate + AMS <i>fb</i> glufosinate + AMS	0.183 3.0 0.183 3.0	2-3 LF 2-3 LF PREFL PREFL	59	100	100	23	100	100	23	100	100
16	Glufosinate + Class Act <i>fb</i> glufosinate + Class Act	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	68	100	100	20	100	100	23	100	100
17	Glufosinate + CL9804 <i>fb</i> glufosinate + CL9804	0.183 1.0 0.183 1.0	2-3 LF 2-3 LF PREFL PREFL	56	100	100	13	100	100	25	100	100
18	Glufosinate + Placement Pro-Pak <i>fb</i> glufosinate + Placement Pro-Pak	0.183 1.0 0.183 1.0	2-3 LF 2-3 LF PREFL PREFL	60	100	100	10	100	100	33	100	100
19	Glufosinate + Corral AMS <i>fb</i> glufosinate + Corral AMS	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	56	100	100	18	100	95	21	100	95
20	Glufosinate + Array <i>fb</i> glufosinate + Array	0.183 1.4 0.183 1.4	2-3 LF 2-3 LF PREFL PREFL	54	100	100	20	100	96	28	100	96
21	Glufosinate + Class Act II <i>fb</i> glufosinate <i>fb</i> Class Act II	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	68	100	100	23	100	100	31	100	100
22	Glufosinate + AG-98 <i>fb</i> glufosinate + AG-98	0.183 0.25% 0.183 0.25%	2-3 LF 2-3 LF PREFL PREFL	58	100	100	18	100	100	33	100	100
23	Glufosinate <i>fb</i> glufosinate	0.365 0.365	2-3 LF PREFL	70	100	100	20	100	99	33	100	99
LSD (0.05)				19	0	13	13	13	10	18	12	12

continued

Table 16. Section 3.

Herbicide	Application		Weed control						
	Rate (lb ai/A)	timing	Northern jointvetch (AESVI)			Hemp sesbania (SEBEX)			Amazon sprangletop (LEFPA)
			6/15	7/11	/16	6/15	7/11	8/16	8/16
			----- (%) -----						
1 Untreated check			0	0	0	0	0	0	0
2 Glufosinate <i>fb</i>	0.312	2-3 LF	64	100	99	95	100	100	100
glufosinate	0.267	PREFL							
3 Glufosinate <i>fb</i>	0.312	2-3 LF	74	100	98	93	99	99	100
glufosinate	0.223	PREFL							
4 Glufosinate <i>fb</i>	0.356	2-3 LF	80	100	99	96	100	100	100
glufosinate	0.178	PREFL							
5 Pendimethalin <i>fb</i>	1.0	DPRE	13	100	100	23	100	100	100
glufosinate	0.312	PREFL							
6 Propanil <i>fb</i>	4.0	2-3 LF	81	100	100	96	100	100	100
glufosinate	0.312	PREFL							
7 Quinclorac +	0.375	2-3 LF	81	100	100	88	100	100	100
AG-98 <i>fb</i>	0.25%	2-3 LF							
glufosinate	0.312	PREFL							
8 Clomazone <i>fb</i>	0.4	PRE	40	100	100	8	100	100	100
glufosinate	0.312	PREFL							
9 Glufosinate +	0.312	2-3 LF	83	55	13	96	81	31	91
(propanil + molinate)	5.35	2-3 LF							
10 Glufosinate +	0.312	2-3 LF	75	55	25	97	85	55	65
bentazon	0.75	2-3 LF							
11 Glufosinate +	0.312	2-3 LF	86	78	43	98	86	61	90
halosulfuron +	0.0312	2-3 LF							
AG-98	0.25%	2-3 LF							
12 Clomazone +	0.3	PRE	89	100	93	93	100	100	100
quinclorac <i>fb</i>	0.19	PRE							
(propanil + molinate)	4.5	PREFL							
13 Quinclorac <i>fb</i>	0.375	PRE	97	100	100	97	100	100	73
propanil (Stam M-4)	4.0	PREFL							
14 Glufosinate <i>fb</i>	0.183	2-3 LF	78	100	100	96	100	100	100
glufosinate	0.183	PREFL							
15 Glufosinate +	0.183	2-3 LF	75	100	97	96	99	98	100
AMS <i>fb</i>	3.0	2-3 LF							
glufosinate +	0.183	PREFL							
AMS	3.0	PREFL							
16 Glufosinate +	0.183	2-3 LF	53	100	100	91	100	100	100
Class Act <i>fb</i>	2.5	2-3 LF							
glufosinate +	0.183	PREFL							
Class Act	2.5	PREFL							
17 Glufosinate +	0.183	2-3 LF	60	100	100	89	100	100	100
CL9804 <i>fb</i>	1.0	2-3 LF							
glufosinate +	0.183	PREFL							
CL9804	1.0	PREFL							
18 Glufosinate +	0.183	2-3 LF	46	100	96	70	100	100	100
Placement Pro-Pak	1.0	2-3 LF							
<i>fb</i> glufosinate +	0.183	PREFL							
Placement Pro-Pak	1.0	PREFL							

continued

Table 16. Section 3. Continued.

Herbicide	Application Rate timing (lb ai/A)		Weed control						
			Northern jointvetch (AESVI)			Hemp sesbania (SEBEX)			Amazon sprangletop (LEFPA)
			6/15	7/11	/16	6/15	7/11	8/16	8/16
			----- (%) -----						
19	Glufosinate + Corral AMS <i>fb</i>	0.183 2-3 LF 2.5 2-3 LF	53	100	99	86	99	100	100
	glufosinate + Corral AMS	0.183 PREFL 2.5 PREFL							
20	Glufosinate + Array <i>fb</i>	0.183 2-3 LF 1.4 2-3 LF	35	100	100	88	100	100	100
	glufosinate + Array	0.183 PREFL 1.4 PREFL							
21	Glufosinate + Class Act II <i>fb</i>	0.183 2-3 LF 2.5 2-3 LF	63	100	100	91	100	100	100
	glufosinate <i>fb</i> Class Act II	0.183 PREFL 2.5 PREFL							
22	Glufosinate + AG-98 <i>fb</i>	0.183 2-3 LF 0.25% 2-3 LF	60	100	100	97	100	100	100
	glufosinate + AG-98	0.183 PREFL 0.25% PREFL							
23	Glufosinate <i>fb</i> glufosinate	0.365 2-3 LF 0.365 PREFL	66	100	100	94	100	100	100
LSD (0.05)			23	11	6	11	7	20	13

continued

Table 16. Section 4.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice							
			Chlorosis				Biomass reduction			
			6/1	6/9	6/15	6/22	6/1	6/9	6/15	6/22
			----- (%) -----							
1	Untreated check		0	0	0	0	0	0	0	0
2	Glufosinate <i>fb</i> glufosinate	0.312 2-3 LF 0.267 PREFL	0	0	0	0	0	0	0	0
3	Glufosinate <i>fb</i> glufosinate	0.312 2-3 LF 0.223 PREFL	0	0	0	0	0	0	0	0
4	Glufosinate <i>fb</i> glufosinate	0.356 2-3 LF 0.178 PREFL	0	0	0	0	0	0	0	0
5	Pendimethalin <i>fb</i> glufosinate	1.0 DPRE 0.312 PREFL	0	0	0	0	0	0	0	0
6	Propanil <i>fb</i> glufosinate	4.0 2-3 LF 0.312 PREFL	0	0	0	0	0	0	0	0
7	Quinclorac + AG-98 <i>fb</i> glufosinate	0.375 2-3 LF 0.25% 2-3 LF 0.312 PREFL	0	0	0	0	0	0	0	0
8	Clomazone <i>fb</i> glufosinate	0.4 PRE 0.312 PREFL	60	54	23	13	11	16	29	16
9	Glufosinate + (propanil + molinate)	0.312 2-3 LF 5.35 2-3 LF	0	0	0	0	0	0	0	0

continued

Table 16. Section 4. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice									
			Chlorosis				Biomass reduction					
			6/1	6/9	6/15	6/22	6/1	6/9	6/15	6/22		
			----- (%) -----									
10	Glufosinate + bentazon	0.312 0.75	2-3 LF 2-3 LF	0	0	0	0	0	0	0	0	0
11	Glufosinate + halosulfuron + AG-98	0.312 0.0312 0.25%	2-3 LF 2-3 LF 2-3 LF	0	0	0	0	0	0	0	0	0
12	Clomazone + quinclorac <i>fb</i> (propanil + molinate)	0.3 0.19 4.5	PRE PRE PREFL	53	44	11	5	5	5	13	5	
13	Quinclorac <i>fb</i> propanil (Stam M-4)	0.375 4.0	PRE PREFL	0	0	0	0	5	3	3	1	
14	Glufosinate <i>fb</i> glufosinate	0.183 0.183	2-3 LF PREFL	0	0	0	0	0	0	0	0	0
15	Glufosinate + AMS <i>fb</i> glufosinate + AMS	0.183 3.0 0.183 3.0	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
16	Glufosinate + Class Act <i>fb</i> glufosinate + Class Act	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
17	Glufosinate + CL9804 <i>fb</i> glufosinate + CL9804	0.183 1.0 0.183 1.0	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
18	Glufosinate + Placement Pro-Pak <i>fb</i> glufosinate + Placement Pro-Pak	0.183 1.0 0.183 1.0	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
19	Glufosinate + Corral AMS <i>fb</i> glufosinate + Corral AMS	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
20	Glufosinate + Array <i>fb</i> glufosinate + Array	0.183 1.4 0.183 1.4	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
21	Glufosinate + Class Act II <i>fb</i> glufosinate <i>fb</i> Class Act II	0.183 2.5 0.183 2.5	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
22	Glufosinate + AG-98 <i>fb</i> glufosinate + AG-98	0.183 0.25% 0.183 0.25%	2-3 LF 2-3 LF PREFL PREFL	0	0	0	0	0	0	0	0	0
23	Glufosinate <i>fb</i> glufosinate	0.365 0.365	2-3 LF PREFL	0	0	0	0	0	0	0	0	0
LSD (0.05)				2	4	3	1	3	3	6	4	

continued

Table 16. Section 5.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice				Yield 9/21 (lb/A)
			Injury				
			6/1	6/9	6/15	6/22	
			----- (%) -----				
1 Untreated check			0	0	0	0	799
2 Glufosinate <i>fb</i>	0.312	2-3 LF	0	0	0	0	7613
glufosinate	0.267	PREFL					
3 Glufosinate <i>fb</i>	0.312	2-3 LF	0	0	0	0	7358
glufosinate	0.223	PREFL					
4 Glufosinate <i>fb</i>	0.356	2-3 LF	0	0	0	0	7810
glufosinate	0.178	PREFL					
5 Pendimethalin <i>fb</i>	1.0	DPRE	0	0	0	0	8229
glufosinate	0.312	PREFL					
6 Propanil <i>fb</i>	4.0	2-3 LF	0	0	0	0	8356
glufosinate	0.312	PREFL					
7 Quinclorac +	0.375	2-3 LF	0	1	0	0	7960
AG-98 <i>fb</i>	0.25%	2-3 LF					
glufosinate	0.312	PREFL					
8 Clomazone <i>fb</i>	0.4	PRE	9	11	28	16	7916
glufosinate	0.312	PREFL					
9 Glufosinate +	0.312	2-3 LF	0	0	0	0	5421
(propanil + molinate)	5.35	2-3 LF					
10 Glufosinate +	0.312	2-3 LF	0	0	0	0	3415
bentazon	0.75	2-3 LF					
11 Glufosinate +	0.312	2-3 LF	0	0	0	0	5540
halosulfuron +	0.0312	2-3 LF					
AG-98	0.25%	2-3 LF					
12 Clomazone +	0.3	PRE	14	20	14	10	8524
quinclorac <i>fb</i>	0.19	PRE					
(propanil + molinate)	4.5	PREFL					
13 Quinclorac <i>fb</i>	0.375	PRE	8	11	5	4	6434
propanil (Stam M-4)	4.0	PREFL					
14 Glufosinate <i>fb</i>	0.183	2-3 LF	0	3	0	0	7881
glufosinate	0.183	PREFL					
15 Glufosinate +	0.183	2-3 LF	0	1	0	0	6912
AMS <i>fb</i>	3.0	2-3 LF					
glufosinate +	0.183	PREFL					
AMS	3.0	PREFL					
16 Glufosinate +	0.183	2-3 LF	0	0	0	0	7329
Class Act <i>fb</i>	2.5	2-3 LF					
glufosinate +	0.183	PREFL					
Class Act	2.5	PREFL					
17 Glufosinate +	0.183	2-3 LF	0	0	0	0	6738
CL9804 <i>fb</i>	1.0	2-3 LF					
glufosinate +	0.183	PREFL					
CL9804	1.0	PREFL					
18 Glufosinate +	0.183	2-3 LF	0	0	0	0	8206
Placement Pro-Pak <i>fb</i>	1.0	2-3 LF					
glufosinate +	0.183	PREFL					
Placement Pro-Pak	1.0	PREFL					
19 Glufosinate +	0.183	2-3 LF	0	0	0	0	7721
Corral AMS <i>fb</i>	2.5	2-3 LF					
glufosinate +	0.183	PREFL					
Corral AMS	2.5	PREFL					

continued

Table 16. Section 5. Continued.

Herbicide	Rate (lb ai/A)	Application timing	Effect on rice				Yield (lb/A)
			Injury				
			6/1	6/9	6/15	6/22	
			----- (%) -----				
20	0.183	2-3 LF	0	0	0	0	8261
	1.4	2-3 LF					
	0.183	PREFL					
	1.4	PREFL					
21	0.183	2-3 LF	0	0	0	0	8203
	2.5	2-3 LF					
	0.183	PREFL					
	2.5	PREFL					
22	0.183	2-3 LF	0	0	0	0	8534
	0.25%	2-3 LF					
	0.183	PREFL					
	0.25%	PREFL					
23	0.365	2-3 LF	0	0	0	0	7986
	0.365	PREFL					
LSD (0.05)			2	6	5	3	1524

Table 17. CGA-362622 on Clearfield rice, Stuttgart, 2000.

SUMMARY

CGA-362622 (proposed common name, trifloxysulfuron), a sulfonylurea compound, is currently being evaluated as a potential postemergence cotton herbicide. This research examined the potential tolerance of imazethapyr-tolerant rice (Clearfield rice 3510) to CGA-362622. CGA-362622 was used at 0.0023, 0.0047, and 0.0094 lb ai/A applied at the 2- to 3-leaf rice stage or at the 4- to 6-leaf rice stage applied alone and as sequential applications. Imazethapyr (NEWPATH) was also evaluated alone at 0.063 lb ai/A and in combination with several recommended rice herbicides.

Propanil-resistant and -susceptible barnyardgrass control was obtained with imazethapyr programs and with CGA-362622 at 0.0047 and 0.0094 lb/A. All programs except CGA-362622 applied at 0.0023 lb/A provided control of broadleaf signalgrass. Tall morningglory control ranged from 77 to 100% with various imazethapyr programs, but was controlled 100% with all CGA-362622 rates. Imazethapyr needed to be used in a program with propanil or quinclorac to control northern jointvetch and hemp sesbania. CGA-362622 provided >90% control of both northern jointvetch and hemp sesbania when applied alone at 4- to 5-leaf rice or in a sequential program. Bearded sprangletop was controlled with imazethapyr or CGA-362622 applied at 0.0094 lb/A. CGA-362622 was the only herbicide causing noticeable rice injury (6 to 32%) and was the only herbicide that delayed rice heading (2 to 6 days) at the higher rate of 0.0094 lb/A.

Yield was taken on this early-season cultivar, and few differences in yield were observed between CGA-362622 and imazethapyr programs. The failure to detect differences, however, can partially be due to the low yield potential of this rice cultivar (70 to 90 bu/A). Future research should be conducted on newer Clearfield rice lines being developed to determine if yield reduction will occur.

TEST INFORMATION

Location	Stuttgart	Planting date	May 17, 2000
Experimental Design / replications	RCB / 4	Harvest date	N/A
Plot size	6 ft x 16 ft	Crop / Variety	rice / Clearfield rice (3510)
Row width / Number of rows per plot	7 in. / 7	Dates of flushing	June 9 and 13, 2000
Soil type ... Dewitt silt loam (8% sand, 75% silt, 16% clay)		Date of Flooding	June 27, 2000
% OM / pH	0.94 / 5.2		

Comments: PRE = preemergence; EPOST = early postemergence; MIDPOST = mid-postemergence; and PREFL = pre-flood.

Application type	PRE	EPOST	MIDPOST	PREFL
Date applied	May 18, 2000	June 2, 2000	June 12, 2000	June 19, 2000
Time	10:00 am	2:30 pm	7:00 pm	10:00 am
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	82 / 78	95 / 92	93 / 84	93 / 84
Relative humidity (%)	83	42	62	85
Wind (mph)	3	2	3	1
Cloud cover (%)	20	15	40	50
Soil moisture	adequate	adequate	adequate	adequate
Crop stage/Height	N/A	2-3 lf / 5.5"	4 lf / 8"	5-6 lf / 10"
Sprayer type/mph	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3	BkPkCO ₂ / 3
Nozzle type/Size	T-Jet DG / 110015	T-Jet / DG / 110015	T-Jet DG / 110015	T-Jet DG / 110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 18	21 / 3 / 18	29 / 3 / 18	/ 3 / 18
Gpa / Psi	10 / 30	10 / 30	10 / 28	15 / 38
Weed species (density)	----- [# leaves/height (in.)] -----			
S-ECHCG (13/ft in row)	N/A	1-2 lf / 1"	3 lf / 2-3"	4 lf / 8-9"
R-ECHCG (13/ft in row)	N/A	2-3 lf / 2-3"	3-4 lf / 4"	5 lf / 8-10"
N-ECHCG (8-10/ft ²)	N/A	2-3 lf / 3-4"	4 lf / 4-5"	5-6 lf / 8-10"
BRAPP (20/ft in row)	N/A	2-3 lf / 1-2"	3-4 lf / 3-4"	4-5 lf / 5-7"
PHBPU (13/ft in row)	N/A	3 lf / 1-2"	4 lf / 2-3"	11 lf / 5-6"
AESVI (4/ft in row)	N/A	4 lf / 1-2"	4-5 lf / 3-4"	7 lf / 6-7"
SEBEX (28/ft in row)	N/A	3 lf / 3-4"	4-5 lf / 8-9"	13 lf / 9-10"
LEFPA (0.25/ft ²)	N/A	N/A	N/A	1 lf / 0.5"

Table 17. Section 1.

Herbicide	Rate (lb ai/A)	Application timing	Barnyardgrass control								
			Natural (N-ECHCG)			Susceptible (S-ECHCG)		Resistant (R-ECHCG)			
			6/9	6/28	7/18	6/28	7/18	6/1	6/28	7/18	
			----- (%) -----								
1	Untreated check		0	0	0	0	0	0	0	0	
2	Imazethapyr	0.063 PRE	97	100	100	100	100	88	100	100	
3	Imazethapyr <i>fb</i>	0.063 PRE	97	100	97	96	97	94	96	97	
	imazethapyr +	0.063 MPOST									
	AG-98	0.25% MPOST									
4	Imazethapyr <i>fb</i>	0.063 PRE	98	100	100	100	100	95	100	100	
	propanil	4.0 MPOST									
5	Imazethapyr <i>fb</i>	0.063 PRE	98	100	100	100	100	96	100	100	
	propanil +	4.0 MPOST									
	quinclorac	0.25 MPOST									
6	Imazethapyr <i>fb</i>	0.063 PRE	97	100	100	100	100	93	100	100	
	propanil +	4.0 MPOST									
	pendimethalin	1.0 MPOST									
7	Propanil	4.0 MPOST	0	83	0	65	0	0	53	0	
8	Propanil <i>fb</i>	4.0 EPOST	61	88	0	38	0	0	35	0	
	propanil	4.0 MPOST									
9	Propanil +	4.0 MPOST	0	100	33	73	35	0	73	30	
	quinclorac	0.25 MPOST									
10	Propanil +	4.0 MPOST	0	65	0	53	0	0	30	0	
	pendimethalin	1.0 MPOST									
11	CGA-362622 +	0.0023 EPOST	92	95	74	96	74	0	96	71	
	AG-98	0.25% EPOST									
12	CGA-362622 +	0.0047 EPOST	92	100	96	100	98	0	100	98	
	AG-98	0.25% EPOST									
13	CGA-362622 +	0.0094 EPOST	95	100	99	100	99	0	100	99	
	AG-98	0.25% EPOST									
14	CGA-362622 +	0.0023 PREFL	0	55	53	58	56	0	58	59	
	AG-98	0.25% PREFL									
15	CGA-362622 +	0.0047 PREFL	0	99	99	71	100	0	71	100	
	AG-98	0.25% PREFL									
16	CGA-362622 +	0.0094 PREFL	0	80	100	75	100	0	75	100	
	AG-98	0.25% PREFL									
17	CGA-362622 +	0.0023 EPOST	93	99	100	99	100	0	99	100	
	AG-98 <i>fb</i>	0.25% EPOST									
	CGA-362622 +	0.0023 PREFL									
	AG-98	0.25% PREFL									
18	CGA-362622 +	0.0047 EPOST	97	100	99	99	100	0	99	100	
	AG-98 <i>fb</i>	0.25% EPOST									
	CGA-362622 +	0.0047 PREFL									
	AG-98	0.25% PREFL									
19	CGA-362622 +	0.0094 EPOST	97	100	100	100	100	0	100	100	
	AG-98 <i>fb</i>	0.25% EPOST									
	CGA-362622 +	0.0094 PREFL									
	AG-98	0.25% PREFL									
LSD (0.05)			10	15	13	20	14	4	17	15	

continued

Table 17. Section 2.

Herbicide	Rate (lb ai/A)	Application timing	Weed control									
			Broadleaf signalgrass (BRAPP)			Tall morningglory (PHBPU)			Northern jointvetch (AESVI)			
			6/9	6/28	7/18	6/9	6/28	7/18	6/9	6/28	7/18	
			----- (%) -----									
1	Untreated check		0	0	0	0	0	0	0	0	0	0
2	Imazethapyr	0.063 PRE	95	96	100	75	88	97	0	28	0	
3	Imazethapyr <i>fb</i>	0.063 PRE	83	90	100	75	78	100	0	28	15	
	imazethapyr +	0.063 MPOST										
	AG-98	0.25 MPOST										
4	Imazethapyr <i>fb</i>	0.063 PRE	95	100	100	89	89	100	0	63	10	
	propanil	4.0 MPOST										
5	Imazethapyr <i>fb</i>	0.063 PRE	96	100	100	78	100	100	0	100	100	
	propanil +	4.0 MPOST										
	quinclorac	0.25 MPOST										
6	Imazethapyr <i>fb</i>	0.063 PRE	96	100	100	89	93	99	0	83	48	
	propanil +	4.0 MPOST										
	pendimethalin	1.0 MPOST										
7	Propanil	4.0 MPOST	0	48	96	0	33	10	0	75	55	
8	Propanil <i>fb</i>	4.0 EPOST	88	93	100	49	48	10	98	100	94	
	propanil	4.0 MPOST										
9	Propanil +	4.0 MPOST	0	88	100	0	94	95	0	100	83	
	quinclorac	0.25 MPOST										
10	Propanil +	4.0 MPOST	0	35	100	0	49	18	0	70	45	
	pendimethalin	1.0 MPOST										
11	CGA-362622 +	0.0023 EPOST	91	93	100	61	38	5	93	83	25	
	AG-98	0.25 EPOST										
12	CGA-362622 +	0.0047 EPOST	90	100	100	66	80	65	96	93	58	
	AG-98	0.25 EPOST										
13	CGA-362622 +	0.0094 EPOST	94	100	100	73	68	88	96	94	75	
	AG-98	0.25 EPOST										
14	CGA-362622 +	0.0023 PREFL	0	38	98	0	30	95	0	88	94	
	AG-98	0.25 PREFL										
15	CGA-362622 +	0.0047 PREFL	0	33	60	0	38	100	0	94	93	
	AG-98	0.25 PREFL										
16	CGA-362622 +	0.0094 PREFL	0	45	93	0	23	100	0	99	100	
	AG-98	0.25 PREFL										
17	CGA-362622 +	0.0023 EPOST	94	99	100	51	36	100	91	100	98	
	AG-98 <i>fb</i>	0.25 EPOST										
	CGA-362622 +	0.0023 PREFL										
	AG-98	0.25 PREFL										
18	CGA-362622 +	0.0047 EPOST	96	100	100	68	55	100	96	100	90	
	AG-98 <i>fb</i>	0.25 EPOST										
	CGA-362622 +	0.0047 PREFL										
	AG-98	0.25 PREFL										
19	CGA-362622 +	0.0094 EPOST	93	100	100	71	85	100	95	100	98	
	AG-98 <i>fb</i>	0.25 EPOST										
	CGA-362622 +	0.0094 PREFL										
	AG-98	0.25 PREFL										
LSD (0.05)			9	18	8	11	20	8	2	19	20	

continued

Table 17. Section 3.

Herbicide	Rate (lb ai/A)	Application timing	Weed control				Effect on rice			Days to 50% heading (DAE) ^z
			Hemp sesbania (SEBEX)			Bearded sprangletop (LEFFA) 7/18 (%)	Injury			
			6/9	6/28	7/18		6/15	6/28	7/18	
1 Untreated check			0	0	0	0	0	0	0	54
2 Imazethapyr	0.063	PRE	0	0	0	92	0	0	0	54
3 Imazethapyr <i>fb</i>	0.063	PRE	0	0	0	92	0	15	0	54
imazethapyr + AG-98	0.063 0.25	MPOST MPOST								
4 Imazethapyr <i>fb</i>	0.063	PRE	5	93	83	91	0	0	0	55
propanil	4.0	MPOST								
5 Imazethapyr <i>fb</i>	0.063	PRE	5	100	100	90	5	3	0	55
propanil + quinclorac	4.0 0.25	MPOST MPOST								
6 Imazethapyr <i>fb</i>	0.063	PRE	13	99	90	93	0	0	3	55
propanil + pendimethalin	4.0 1.0	MPOST MPOST								
7 Propanil	4.0	MPOST	0	92	75	50	0	0	0	54
8 Propanil <i>fb</i>	4.0	EPOST	98	95	82	48	0	0	0	54
propanil	4.0	MPOST								
9 Propanil + quinclorac	4.0 0.25	MPOST MPOST	0	100	85	55	0	0	0	55
10 Propanil + pendimethalin	4.0 1.0	MPOST MPOST	0	92	86	50	0	0	0	54
11 CGA-362622 + AG-98	0.0023 0.25	EPOST EPOST	75	85	60	76	0	0	0	54
12 CGA-362622 + AG-98	0.0047 0.25	EPOST EPOST	91	96	89	90	5	0	0	54
13 CGA-362622 + AG-98	0.0094 0.25	EPOST EPOST	94	98	90	92	4	3	0	54
14 CGA-362622 + AG-98	0.0023 0.25	PREFL PREFL	0	53	95	50	0	23	0	56
15 CGA-362622 + AG-98	0.0047 0.25	PREFL PREFL	0	86	100	53	0	20	11	57
16 CGA-362622 + AG-98	0.0094 0.25	PREFL PREFL	0	91	100	83	0	28	26	60
17 CGA-362622 + AG-98 <i>fb</i>	0.0023 0.25	EPOST EPOST	78	98	100	91	0	6	5	56
CGA-362622 + AG-98	0.0023 0.25	PREFL PREFL								
18 CGA-362622 + AG-98 <i>fb</i>	0.0047 0.25	EPOST EPOST	95	100	97	96	5	13	15	58
CGA-362622 + AG-98	0.0047 0.25	PREFL PREFL								
19 CGA-362622 + AG-98 <i>fb</i>	0.0094 0.25	EPOST EPOST	95	100	100	99	3	33	39	60
CGA-362622 + AG-98	0.0094 0.25	PREFL PREFL								
LSD (0.05)			8	9	13	17	4	7	5	2

^z DAE = days after emergence.

Appendix Table 1. Common and trade names, formulation (pounds of active ingredient or acid equivalent per gallon), sponsoring companies, and chemical names of herbicides.^z

Common name	Trade name (formulation ^y)	Company	Chemical name
acifluorfen	Blazer (2 SL)	BASF	5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid
acifluorfen + bentazon	Storm (4 SL)	BASF	5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid + 3-(1-methylethyl)-(1 <i>H</i>)-2,1,3-benzothiadiazin-4(3 <i>H</i>)-one 2,2-dioxide
AG-98 (surfactant)	AG-98	Rohm & Haas	–
Agri-Dex (crop oil)	Agri-Dex	Helena	–
AMS (adjuvant)	AMS	–	–
Array (adjuvant)	Array	Intec	–
bensulfuron	Londax (60 DF)	DuPont	2-[[[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]methyl]benzoic acid
bentazon	Basagran (4 SL)	BASF	3-(1-methylethyl)-(1 <i>H</i>)-2,1,3-benzothiadiazin-4(3 <i>H</i>)-one 2,2-dioxide
bispyribac-sodium (formerly V-10029)	Regiment (80 WP)	Valent	sodium 2,6-bis[[4,6-dimethoxypyrimidin-2-yl]oxy]benzoate
carfentrazone	Aim (40 DF)	FMC	<i>N</i> -[2,4-dichloro-5-(4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1 <i>H</i> -1,2,4-triazol)-1-ylphenyl]-methanesulfonamide
CGA-362622	–	Syngenta	–
CL9804 (adjuvant)	CL9804		<i>N</i> -[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]-3-(2,2,2-trifluoroethoxy)-2-pyridine sulfonamide
Class Act (adjuvant)	Class Act	Wilfarm	–
Class Act II (adjuvant)	Class Act II	Wilfarm	–
cleoxydim (BAS 625H)	Aura (1.67 EC)	BASF	2-[1-(2-(4-chlorophenoxy)propoxyimino)butyl]-3-oxo-5-thione-3-ylcyclohex-1-enol
clomazone	Command (3 ME)	FMC	2-[(2-chlorophenyl)methyl]-4,4-dimethyl-3-isoxazolidinone
Corral AMS (adjuvant)	Corral AMS	Wilfarm	–
Crop Oil Plus (adjuvant)	Crop Oil Plus	Wilfarm	
cyhalofop (formerly DE-537)	Clincher (2.38 EC)	Dow AgroSciences	(<i>R</i>)-2-[4-(4-cyano-2-fluorophenoxy)phenoxy]propanoic acid
Eth-N-Gard (adjuvant)	Eth-N-Gard	Wilfarm	
fenoxaprop	Whip (1EC); Whip 360 (0.57 EC)	AgrEvo	(+)-2-[4-[(6-chloro-2-benzoxazolyl)oxy]phenoxy]propanoic acid
fenoxaprop + safener (isoxadifen)	Ricestar (1.2 EC)	AgrEvo	(see fenoxaprop)
glufosinate	Liberty (1.67 EC)	AgrEvo	2-amino-4-(hydroxymethylphosphinyl)butanoic acid
glyphosate	Roundup Ultra (4 SL)	Monsanto	<i>N</i> -(phosphonomethyl)glycine
halosulfuron	Permit (75 DF)	Monsanto	3-chloro-5-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]-sulfonyl]-1-methyl-1 <i>H</i> -pyrazole-4-carboxylic acid

continued

Appendix Table 1. Continued.

Common name	Trade name (formulation ^y)	Company	Chemical name
Hasten (adjuvant)	Hasten	Wilfarm	
Hi-Per-Oil (adjuvant)	Hi-Per-Oil	Wilfarm	
imazethapyr	Pursuit (5L, 70 WG) NEWPATH (2 SL)	Cyanamid BASF	2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1 <i>H</i> -imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid
imazethapyr + glyphosate	Extreme (2.17 EC)	BASF	see individual components
Kinetic (surfactant)	Kinetic	Helena	–
molinate	Ordram (15 G)	Zeneca	S-ethyl hexahydro-1 <i>H</i> -azepine-1-carbothioate
nicosulfuron	Accent (75 DG)	DuPont	2-[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl]amino]sulfonyl]- <i>N,N</i> -dimethyl-3-pyridinecarboxamide
paraquat	Gramoxone Extra (2.5 SL)	Zeneca	1,1'-dimethyl-4,4'-bipyridinium ion
pendimethalin	Prowl (3.3 EC); Pentagon (60 DF)	Cyanamid	<i>N</i> -(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine
Penetrator Plus (crop oil / surfactant)	Penetrator Plus	Helena	–
Peptoil (adjuvant)	Peptoil	Wilfarm	
Placement Pro-Pak (adjuvant)	Placement Pro-Pak	Wilfarm	
propanil	Stam 4M (4 EC); Stam 80DF; Super Wham (4 EC)	Rohm & Haas; RiceCo	<i>N</i> -(3,4-dichlorophenyl)propanamide
(propanil + molinate)	Arrosolo (3 + 3 EC)	Zeneca	(see individual components)
quinclorac	Facet (75 DF; 1.5 G)	BASF	3,7-dichloro-8-quinolinecarboxylic acid
RH-149109	–	Rohm & Haas	–
thiobencarb	Bolero (8 EC; 10 G)	Valent	S-[(4-chlorophenyl)methyl]diethylcarbamoithioate
triclopyr	Grandstand (3 SL)	Dow AgroSciences	[(3,5,6-trichloro-pyridinyl)oxy]acetic acid

^z '–' indicates information is not available or not applicable.

^y Formulations are followed by amount of active ingredient per gallon for liquids and % active ingredient for solid formulations. Abbreviations for formulations: EC = emulsifiable concentrate; DF = dry flowable; G = granule; ME = micro-encapsulated; WP = wetttable powder; SL = soluble liquid; F = flowable.

Appendix Table 2. Common, coded, and scientific names of plant species.

Common name	Bayer code ^z	Scientific name
Amazon sprangletop	LEFPA	<i>Leptochloa panicoides</i> (Presl) Hitchc.
Annual sedge	CYPCP	<i>Cyperus compressus</i> L.
Barnyardgrass	ECHCG	<i>Echinochloa crus-galli</i> (L.) Beauv.
Bearded sprangletop	LEFFA	<i>Leptochloa fascicularis</i> (Lam.) Gray
Broadleaf signalgrass	BRAPP	<i>Brachiaria platyphylla</i> (Griseb.) Nash.
Entireleaf morningglory	IPOGH	<i>Ipomoea hederacea</i> var. <i>integriuscula</i>
Hemp sesbania	SEBEX	<i>Sesbania exaltata</i> (Raf.) Rydb.
Ivyleaf morningglory	IPOHE	<i>Ipomoea hederacea</i> (L.) Jacq.
Northern jointvetch	AESVI	<i>Aeschynomene virginica</i> (L.) B.S.P.
Pitted morningglory	IPOLA)	<i>Ipomoea lacunosa</i> L.

^z WSSA-approved computer code from Composite List of Weeds, Revised 1989. WSSA, 810 East 10th Street, Lawrence, KS 66044.

Appendix Table 3. Climatological data, Rice Research and Extension Center, Stuttgart, 2000.

Day	May			June			July			August		
	Temp.		Rain- fall	Temp.		Rain- fall	Temp.		Rain- fall	Temp.		Rain- fall
	Max.	Min.		Max.	Min.		Max.	Min.		Max.	Min.	
(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	
1	80	67	0.8	91	76		87	71		92	72	
2	81	63		92	74		89	78		90	70	
3	82	69	1.37	94	75	0.50	93	74		94	71	0.16
4	71	67	0.34	80	74	0.07	92	75		96	73	
5	76	68		75	71	0.62	92	78		95	73	
6	77	69	0.67	78	61		94	70		98	74	
7	79	69	2.02	78	61		95	76		98	74	
8	84	74		82	64		97	65		98	74	
9	84	73		86	71		95	65		98	74	
10	82	61		92	73		97	61		98	75	
11	78	64	0.54	92	83		97	75		100	72	0.18
12	88	78		93	74		97	74		94	67	
13	89	72		93	75		95	75		92	64	
14	78	64	2.36	88	77		98	75		95	68	
15	73	59		92	72	1.75	97	76		96	69	
16	74	66		88	77		100	76		100	69	
17	74	71		90	79		99	78		102	75	
18	80	74		85	75	0.28	99	77		103	76	
19	87	70	0.58	85	77	0.92	98	77		98	68	
20	78	70	0.16	88	77		101	78		94	68	
21	73	65	0.31	90	74		94	67		94	71	
22	78	70		79	73	0.26	85	66	0.09	100	73	
23	88	76		87	74		86	68		100	74	
24	91	76		92	80		85	63		98	72	
25	89	74		93	81		87	62		98	73	
26	87	75	0.09	95	78		90	64		100	72	
27	90	75		94	77		93	66		102	71	
28	89	75	0.63	85	77		96	68		102	71	
29	86	71		88	70	0.20	96	71		102	71	
30	89	73		84	73		90	69	0.17	104	72	
31	91	72					90	72		105	74	