3-1-1999

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Ron Talbert
University of Arkansas, Fayetteville

Ford Baldwin
University of Arkansas, Fayetteville

David Gealy
University of Arkansas, Fayetteville

Eric Webster
University of Arkansas, Fayetteville

Tomilea Dillon
University of Arkansas, Fayetteville

See next page for additional authors

Authors
Ron Talbert, Ford Baldwin, David Gealy, Eric Webster, Tomilea Dillon, Lance Schmidt, Jeff Rutledge, Celeste Wheller, and Leopoldo Estorninos Jr.

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R.E. Talbert, F.L. Baldwin,
D. Gealy, E. Webster, T. Dillon,
L. Schmidt, J. Rutledge,
C. Wheeler, and
L. Estorninos

ARKANSAS AGRICULTURAL EXPERIMENT STATION
Division of Agriculture University of Arkansas
March 1999 Research Series 462

Editing and cover design by Karen Eskew

Arkansas Agricultural Experiment Station, University of Arkansas Division of Agriculture, Fayetteville. Milo J. Shult, Vice President for Agriculture and Director; Charles J. Scifres, Associate Vice President for Agriculture. PS1.20399. The Arkansas Agricultural Experiment Station follows a nondiscriminatory policy in programs and employment.

ISSN:0099-5010 CODEN:AKAMA6

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Ron Talbert
University Professor
Department of Crop, Soil, and Environmental Sciences
University of Arkansas

David Gealy
USDA-ARS, Plant Physiologist
National Rice Gerplasm Evaluation and Enhancement Center

Tomilea Dillon
Assistant Specialist
Cooperative Extention Service

Jeff Rutledge
Graduate Assistant
Department of Crop, Soil, and Environmental Sciences
University of Arkansas

Ford Baldwin
Extension Weed Scientist
Cooperative Extension Service

Eric Webster
Extension Weed Scientist
Southeast Research and Extension Center

Lance Schmidt
Research Assistant
Department of Crop, Soil, and Environmental Sciences
University of Arkansas

Celeste Wheeler
Research Technician
Cooperative Extension Service

Leopoldo Estorninos, Jr.
Graduate Assistant
Department of Crop, Soil, and Environmental Sciences
University of Arkansas

Arkansas Agricultural Experiment Station
Fayetteville, Arkansas 72701

SUMMARY

Weed control is economically important for production of rice, a major crop in Arkansas. These findings summarize efforts of the team of Arkansas scientists working on weed control strategies for rice during 1997. Various technologies were evaluated in field studies at five locations involving the major weed problems and rice production systems used in the state. Results from these studies will add to the arsenal of weed control options for producers. Highlights include synergists and safeners for herbicides to aid in control of propanil-resistant barnyardgrass; herbicides and flooding techniques for control of red rice and other weeds; and the use of transgenic rice cultivars for broad-spectrum weed control. The preliminary results reported here generally warrant further testing for more advanced findings and for the labeling of new technologies, and finally are the basis for updating safe, effective, and economical recommendations to Arkansas rice producers.

CONTENTS

ACKNOWLEDGMENTS

The authors acknowledge the Arkansas Rice Research and Promotion Board for financial support for some of these experiments. The following companies also provided financial support and chemicals used in the studies: AgrEvo, BASF, Cedar, Cyanamid, DowElanco, DuPont, FMC, Helena, Monsanto, Rhone-Poulenc, Rohm & Haas, Terra, UAP, Valent, and Zeneca.

The assistance of the following individuals is gratefully acknowledged: Howard Black, Biological Technician, National Rice Germplasm Evaluation and Enhancement Center; Mike Dillon, Research Technician, Lonoke; Troy Dillon, Research Technician, Lonoke; Larry Earnest, Superintendent, Southeast Branch Station, Rohwer; Bill Fox, Research Specialist, Rice Research and Extension Center, Stuttgart; John Robinson, Director, Rice Research and Extension Center, Stuttgart; Vaughn Skinner, Farm Manager, Arkansas Agricultural Research and Extention Center, Fayetteville; Randy Spurlock, Research Technician, Rohwer; Jennifer Wells, Graduate Assistant, Arkansas Agricultural Research and Extension Center, Fayetteville; Marilyn McClelland, Research Associate, Arkansas Agrcultural Research and Extension Center, Fayetteville (editing and compilation); and Marci Milus and Joyce Booth, secretarial staff.

HERBICIDE EVALUATION IN ARKANSAS RICE, 1997

Ron Talbert, Ford Baldwin, David Gealy, Eric Webster, Tomilea Dillon, Lance Schmidt, Jeff Rutledge, Celeste Wheeler, and Leopoldo Estorninos, Jr.

INTRODUCTION

Herbicidal weed control 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 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 four of the state's agronomic researchers responsible for weed control in rice. Ron Talbert, located at the Arkansas Agricultural Research and Extension Center, Fayetteville, conducts research at Fayetteville, at the Rice Research and Extension Center, Stuttgart, and at the Lonoke location of the University of Arkansas at Pine Bluff. David Gealy is located at the National Rice Germplasm Evaluation and Enhancement Center at Stuttgart. Ford Baldwin's rice research is located primarily at the Lonoke location of the University of Arkansas at Pine Bluff. Eric Webster, while he was located at the Southeast Research and Extension Center at Monticello, conducted rice research at the Southeast Branch Experiment Station at Rohwer.

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 1997 are presented in Appendix Table 3.

METHODS

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.

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® 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.

Effects of the herbicide treatments were evaluated by weed control ratings, crop injury ratings, crop yields, and crop stand counts. Percentages of weed control and crop injury were visually estimated: 0% represents no effect, and 100% represents complete kill. 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
BkPkCO2, CO2 backpack sprayer
Cot., cotyledon
DAT, days after treatment
DF or EDF, dry flowable
DPF, days prior to flood
DPRE, delayed preemergence
EC, emulsifiable concentrate
EPOST, early postemergence
fb, followed by
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/A, not applicable or not available
Noz, nozzles
NS, not significant
PI, panicle initiation
POFL, after flood
POST, postemergence
PPI, preplant incorporated
PRE, preemergence
PREFL, before flood
RCB, randomized complete block (experimental design)
R-ECHCG, propanil-resistant barnyardgrass
Till, tillering
UAPB, University of Arkansas at Pine Bluff
WAF, weeks after flood
XR, extended range nozzle

Table 1. V-10029 in weed control programs in southern rice, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 12, 1997
Harvest date ..... September 11, 1997
Crop/Variety ..... Rice/Kaybonnet
Date of Flushing ..... May 20 and June 7, 1997
Date of Flood ..... June 19, 1997

Comments: DPRE = delayed preemergence; EPOST = early postemergence; MPOST = mid-postemergence; EPOFL = early post-flood and POFL = post-flood.

Application type	DPRE	EPOST	MPOST	LPOST	EPOFL	POFL
Date applied	May 16, 1997	June 3, 1997	June 10, 1997	June 18, 1997	June 23, 1997	July 8, 1997
Time	6:00 pm	5:00 pm	6:00 pm	5:00 pm	9:30 am	1:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	74 / 78	77 / 81	68 / 75	86 / 88	87 / 84	86 / 84
Relative humidity (%)	65	89	75	65	80	81
Wind (mph, direction)	1	3	4	2	2	4
Weather	clear	partly cloudy	cloudy	mostly clear	clear	partly cloudy
Soil moisture	moist	moist	moist	moist	flooded	flooded
Crop stage/Height	N/A	2-3 lf/ 5"	3-4 lf / 7"	4-5 lf / 9"	5-6 lf / 14"	9 lf - 2 tiller / 23"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR11002	Teejet / XR11002	Teejet / XR11002	Teejet / XR11002	Teejet / XR11002	Teejet / XR11002
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28	15 / 28	15 / 28	15 / 28	15 / 28

Weed species (population)	DPRE	EPOST	MPOST	LPOST	EPOFL	POFL
			(height / # leaves)			
R-ECHCG	N/A	2-3 lf / 1"	3-4 lf / 1.5"	4-5 lf / 3.5"	7-8 lf-2 tillers / 11"	9-10 lf-2 tillers / 16"
ECHCG	N/A	2-3 lf / 1"	3-4 lf / 1.5"	4-5 lf / 3.5"	7-8 lf-2 tillers / 11"	9-10 lf-2 tillers / 15"
SEBEX	N/A	2 lf / 3.5"	4 lf / 4"	5 lf / 5"	5-7 lf / 9"	12 lf / 25"
POROL	N/A	4 lf / 0.25"	5 lf / 1.25"	7 lf / 1.6"	15-20 lf / 3-5"	18-20 lf / 4-6"
BRAPP	N/A	2-3 lf / 0.75"	3-4 lf / 1.5"	4-5 lf / 2.5"	9 lf-2 tillers / 7"	10 lf-2 tillers / 12"
CYPIR	N/A	N/A	spike / 0.5"	2-4 lf / 2.4"	4-5 lf / 6"	5-6 lf / 10"

Conclusions: V-10029 at 0.02 lb/A applied to 5-leaf rice and grass (LPOST) was very effective in controlling propanil-resistant and -susceptible barnyardgrass and hemp sesbania. An application of thiobencarb at 3.0 lb/A, DPRE, or 2.0 lb/A of thiobencarb plus 3.0 lb/A of propanil applied postemergence to 2- to 3-lf grass followed by V-10029 applied to 4- to 5-leaf rice also provided excellent control of the weed species listed above. Other treatments providing excellent control of the weed species present were V-10029 at 0.02 lb/A applied to 4- to 5-lf rice followed by 0.28 lb/A of triclopyr applied post-flood and LGC-40863 at 0.027 or 0.053 lb/A applied to 4- to 5-lf rice. No significant differences in yields were observed among treatments.

Table 1. Section 1.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29	Barnyardgrass (ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29
	(lb/A)		(%)													
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	0
V-10029 +	0.02															
Kinetic (0.25%)		LPOST				55	100	93	93				58	100	93	93
(Propanil + molinate)	6.0	LPOST				63	100	94	98				85	100	100	96
V-10029 + Kinetic	0.02															
(0.25%) fb		MPOST														
triclopyr	0.28	POFL			53	89	98	93	94			53	83	100	98	99
(Propanil + molinate)	4.5	MPOST														
fb triclopyr	0.28	POFL			65	98	100	94	90			60	98	100	96	93

Table 1. Section 1. Continued.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29	Barnyardgrass (ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29
	(lb/A)		(%)													
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
Kinetic (0.25%)		MPOST	94	95	100	99	100	96	98	88	95	100	99	100	96	95
Pendimethalin fb	1.0	DPRE														
propanil (Stam)	4.0	MPOST	95	95	100	99	100	94	93	89	95	100	99	100	96	96
Thiobencarb fb	3.0	DPRE														
V-10029 +	0.02															
Kinetic (0.25%)		MPOST	85	89	98	100	100	96	99	83	86	98	100	100	95	96
Thiobencarb fb	3.0	DPRE														
(propanil +																
molinate)	4.5	MPOST	80	88	94	100	98	93	93	70	84	93	98	100	96	99
Thiobencarb +	2.0															
propanil (Stam) fb	3.0	EPOST														
V-10029 +	0.02															
thiobencarb +	2.0															
Kinetic (0.25%)		MPOST		80	100	100	100	96	98		89	100	100	100	96	98
Thiobencarb +	2.0															
propanil (Stam) fb	3.0	EPOST														
thiobencarb +	2.0															
propanil (Stam)	3.0	MPOST		83	100	100	100	99	98		91	100	100	100	100	98
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
bensulfuron +	0.04															
Kinetic (0.25%)		MPOST	94	98	100	100	100	96	98	89	96	100	100	100	96	96
Pendimethalin fb	1.0	DPRE														
bensulfuron +	0.04															
propanil (Stam)	3.0	MPOST	95	96	100	100	100	96	98	91	96	100	100	100	96	98
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
bensulfuron +	0.04															
Kinetic (0.25%)		EPOFL	96	96	99	100	100	95	94	90	98	99	100	100	95	96

continued

Table 1. Section 1. Continued.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29	Barnyardgrass (ECHCG) 6/4	6/10	6/18	6/23	7/1	7/15	7/29
	(lb/A)		(%)													
Pendimethalin fb bensulfuron	1.0 fb 0.04	DPRE fb EPOFL	93	98	99	99	98	93	90	90	98	99	99	98	93	93
Pendimethalin fb V-10029 + Kinetic (0.25%)	1.0 fb 0.02	DPRE fb EPOFL	94	98	98	100	100	96	98	93	94	98	100	100	98	99
Pendimethalin fb molinate	1.0 fb 4.0	DPRE fb EPOFL	96	96	99	100	100	96	96	91	94	99	100	100	96	95
Pendimethalin fb V-10029 + triclopyr + Kinetic (0.25%)	1.0 fb 0.02 + 0.28	DPRE fb POFL	94	95	100	100	100	96	95	93	96	100	100	100	95	96
Pendimethalin fb molinate fb triclopyr	1.0 fb 4.0 fb 0.28	DPRE fb EPOFL fb POFL	96	98	100	100	100	96	98	93	96	100	100	100	98	96
Thiobencarb + propanil (Stam) fb V-10029 + thiobencarb	2.0 fb 3.0 fb 0.02 + 2.0	EPOST fb MPOST		88	100	100	100	96	98		90	100	100	100	98	99
LGC-40863	0.027	LPOST				55	85	91	98				53	88	91	94
LGC-40863	0.053	LPOST				58	89	95	99				58	95	98	98
LSD (0.05)			6	7	4	7	3	4	5	9	5	5	6	3	4	4

continued

Table 1. Section 2.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/4	6/10	6/18	6/23	7/1	7/15	7/29	Common purslane POROL 6/10	6/18	6/23	Rice flatsedge CYPIR 6/18	6/23
	(lb/A)		(%)											
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0

continued

Table 1. Section 2.

			Weed control												
		Application	Hemp sesbania (SEBEX)								Common purslane POROL			Rice flatsedge CYPIR	
Herbicide	Rate	timing	6/4	6/10	6/18	6/23	7/1	7/15	7/29		6/10	6/18	6/23	6/18	6/23
	(lb/A)		- - - - - -							(%)	- - - - - -				
V-10029 +	0.02														
Kinetic (0.25%)		LPOST				55	100	98	99				71		73
(Propanil + molinate)	6.0	LPOST				95	100	96	99				98		96
V-10029 + Kinetic	0.02														
(0.25%) fb		MPOST													
triclopyr	0.28	POFL			65	89	100	98	99			95	99	38	98
(Propanil + molinate)	4.5	MPOST													
fb triclopyr	0.28	POFL			66	79	53	86	91			78	94	39	41
Pendimethalin fb	1.0	DPRE													
V-10029 +	0.02														
Kinetic (0.25%)		MPOST	19	21	79	99	98	94	98		91	98	96	100	98
Pendimethalin fb	1.0	DPRE													
propanil (Stam)	4.0	MPOST	23	19	98	98	100	95	98		91	99	99	95	95
Thiobencarb fb	3.0	DPRE													
V-10029 +	0.02														
Kinetic (0.25%)		MPOST	35	20	80	100	100	95	98		90	96	100	98	98
Thiobencarb fb	3.0	DPRE													
(propanil +															
molinate)	4.5	MPOST	23	15	76	75	94	44	31		89	93	94	86	93
Thiobencarb +	2.0														
propanil (Stam) fb	3.0	EPOST													
V-10029 +	0.02														
thiobencarb +	2.0														
Kinetic (0.25%)		MPOST		95	100	100	100	86	88		96	100	98	100	99
Thiobencarb +	2.0														
propanil (Stam) fb	3.0	EPOST													
thiobencarb +	2.0														
propanil (Stam)	3.0	MPOST		95	100	100	100	99	100		95	100	100	100	100

continued

Table 1. Section 2. Continued.

			Weed control											
			Hemp sesbania (SEBEX)							Common purslane POROL			Rice flatsedge CYPIR	
Herbicide	Rate	Application timing	6/4	6/10	6/18	6/23	7/1	7/15	7/29	6/10	6/18	6/23	6/18	6/23
	(lb/A)		(%)											
Pendimethalin fb	1.0	DPRE												
V-10029 +	0.02													
bensulfuron +	0.04													
Kinetic (0.25%)		MPOST	34	34	89	99	100	98	99	89	99	99	100	100
Pendimethalin fb	1.0	DPRE												
bensulfuron +	0.04													
propanil (Stam)	3.0	MPOST	24	24	100	100	100	98	99	94	100	100	100	100
Pendimethalin fb	1.0	DPRE												
V-10029 +	0.02													
bensulfuron +	0.04													
Kinetic (0.25%)		EPOFL	28	23	23	33	100	96	99	93	92	95	73	64
Pendimethalin fb	1.0	DPRE												
bensulfuron	0.04	EPOFL	33	21	21	71	100	96	98	84	95	91	74	83
Pendimethalin fb	1.0	DPRE												
V-10029 +	0.02													
Kinetic (0.25%)		EPOFL	33	24	23	25	100	98	100	89	95	98	70	94
Pendimethalin fb	1.0	DPRE												
molinate	4.0	EPOFL	29	19	23	38	28	0	0	85	96	95	50	56
Pendimethalin fb	1.0	DPRE												
V-10029 +	0.02													
triclopyr +	0.28													
Kinetic (0.25%)		POFL	25	18	18	18	13	75	98	95	98	100	80	90
Pendimethalin fb	1.0	DPRE												
molinate fb	4.0	EPOFL												
triclopyr	0.28	POFL	26	24	33	36	28	75	98	86	93	98	76	86
Thiobencarb +	2.0													
propanil (Stam) fb	3.0	EPOST												
V-10029 +	0.02													
thiobencarb	2.0	MPOST		95	100	100	100	96	98	95	100	100	100	100
LGC-40863	0.027	LPOST				50	95	95	98			88		75

continued

Table 1. Section 2. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/4	6/10	6/18	6/23	7/1	7/15	7/29	Common purslane POROL 6/10	6/18	6/23	Rice flatsedge CYPIR 6/18	6/23
	(lb/A)		(%)											
LGC-40863	0.053	LPOST				58	99	99	98			86		68
LSD (0.05)			14	9	12	12	5	6	8	6	5	7	16	17

continued

Table 1. Section 3.

Herbicide	Rate	Application timing	Rice injury 6/4	6/10	6/18	6/23	7/1	7/15	Rice yield
	(lb/A)		(%)						(lb/A)
Untreated check			0	0	0	0	0	0	5719
V-10029 +	0.02								
Kinetic (0.25%)		LPOST				18	9	0	7461
(Propanil + molinate)	6.0	LPOST				10	3	0	7115
V-10029 + Kinetic	0.02								
(0.25%) fb		MPOST							
triclopyr	0.28	POFL			5	8	8	0	7234
(Propanil + molinate)	4.5	MPOST							
fb triclopyr	0.28	POFL			3	10	5	0	6942
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
Kinetic (0.25%)		MPOST	11	9	5	13	11	0	7011
Pendimethalin fb	1.0	DPRE							
propanil (Stam)	4.0	MPOST	6	3	9	8	1	0	6798
Thiobencarb fb	3.0	DPRE							
V-10029 +	0.02								
Kinetic (0.25%)		MPOST	9	3	10	8	4	0	7279
Thiobencarb fb	3.0	DPRE							
(propanil +									
molinate)	4.5	MPOST	5	1	11	0	1	0	6699

continued

Table 1. Section 3.

Herbicide	Rate	Application timing	Rice injury 6/4	6/10	6/18	6/23	7/1	7/15	Rice yield
	(lb/A)		(%)						(lb/A)
Thiobencarb + propanil (Stam) fb V-10029 + thiobencarb + Kinetic (0.25%)	2.0 3.0 0.02 2.0	EPOST MPOST		14	13	11	10	0	7130
Thiobencarb + propanil (Stam) fb thiobencarb + propanil (Stam)	2.0 3.0 2.0 3.0	EPOST MPOST		15	15	9	0	0	7105
Pendimethalin fb V-10029 + bensulfuron + Kinetic (0.25%)	1.0 0.02 0.04	DPRE MPOST	13	9	10	14	11	0	6842
Pendimethalin fb bensulfuron + propanil (Stam)	1.0 0.04 3.0	DPRE MPOST	10	4	5	4	6	0	6959
Pendimethalin fb V-10029 + bensulfuron + Kinetic (0.25%)	1.0 0.02 0.04	DPRE EPOFL	9	4	6	6	23	14	6685
Pendimethalin fb bensulfuron	1.0 0.04	DPRE EPOFL	3	3	4	3	3	0	7204
Pendimethalin fb V-10029 + Kinetic (0.25%)	1.0 0.02	DPRE EPOFL	9	4	1	3	23	11	6947
Pendimethalin fb molinate	1.0 4.0	DPRE EPOFL	8	5	1	5	4	6	6873
Pendimethalin fb V-10029 + triclopyr + Kinetic (0.25%)	1.0 0.02 0.28	DPRE POFL	10	5	1	0	4	0	6921

continued

Table 1. Section 3. Continued.

Herbicide	Rate	Application timing	Rice injury 6/4	6/10	6/18	6/23	7/1	7/15	Rice yield
	(lb/A)		(%)						(lb/A)
Pendimethalin fb	1.0	DPRE							
molinate fb	4.0	EPOFL							
triclopyr	0.28	POFL	9	8	1	6	6	10	7104
Thiobencarb +	2.0								
propanil (Stam) fb	3.0	EPOST							
V-10029 +	0.02								
thiobencarb	2.0	MPOST		15	13	9	3	0	7262
LGC-40863	0.027	LPOST				15	11	0	7051
LGC-40863	0.053	LPOST				14	9	0	7105
LSD (0.05)			5	3	4	5	7	2	NS

Table 2. Evaluation of clomazone (Command) 3ME and 3G in rice, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 8, 1997
Harvest date ..... September 10, 1997
Crop/Variety ..... Rice/Kaybonnet
Date of Flushing ..... May 17, and June 7, 1997
Date of Flood ..... June 16, 1997

Comments: PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence; and EPOST = early postemergence.

Application type	PPI	PRE	DPRE	EPOST
Date applied	May 8, 1997	May 8, 1997	May 13, 1997	May 28, 1997
Time	11:30 am	4:00 pm	6:30 pm	3:00 pm
Incorporation equipment	Triple-K	N/A	N/A	N/A
Air/Soil temperature (F)	79 / 72	85 / 76	75 / 76	71 / 77
Relative humidity (%)	78	81	62	78
Wind (mph, direction)	5	4	3	4
Weather	cloudy	cloudy	clear	cloudy
Soil moisture	moist	moist	moist	wet
Crop stage/Height	N/A	N/A	N/A	2-3 lf / 0.5"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – – – –			
ECHCG	N/A	N/A	N/A	2-3 lf / 0.5"
R-ECHCG	N/A	N/A	N/A	2-3 lf / 0.75"
BRAPP	N/A	N/A	N/A	2-3 lf / 0.5"

Conclusions: Excellent control of resistant- and susceptible-barnyardgrass and broadleaf signalgrass was obtained with all treatments (>93%) at the latest rating date. Command treatments applied PPI and PRE resulted in increased chlorosis, stand reduction and stunting with respect to rates applied. This increased injury, however, did not significantly affect yields. Prowl alone applied DPRE was the only treatment which yielded lower than the untreated check. Command at 0.3 lb/A PPI had significantly higher yield than the untreated check.

Table 2. Section 1.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/18	7/1	Barnyardgrass (ECHCG) 6/4	6/18	7/1	Broadleaf signalgrass (BRAPP) 6/4	6/18	7/1
	(lb/A)		(%)								
Untreated check			0	0	0	0	0	0	0	0	0
Clomazone (3ME)	0.2	PRE	94	94	96	95	95	96	96	95	96
Clomazone (3ME)	0.3	PRE	95	95	98	95	95	98	98	95	98
Clomazone (3ME)	0.4	PRE	95	95	97	95	95	97	96	95	97
Clomazone (3ME)	0.5	PRE	95	93	98	95	94	98	93	94	98
Clomazone (3ME)	0.6	PRE	95	95	96	95	95	96	96	95	96
Clomazone (3G)	0.4	PRE	95	95	96	94	95	96	95	95	96
Clomazone (3G)	0.5	PRE	95	95	96	95	95	96	95	95	96
Clomazone (3G)	0.6	PRE	95	95	98	95	95	98	95	95	98
Clomazone (3ME)	0.2	DPRE	93	94	95	93	95	95	91	94	96
Clomazone (3ME)	0.3	DPRE	95	95	98	95	95	98	96	95	98
Clomazone (3ME)	0.4	DPRE	95	96	98	95	96	98	95	96	98
Clomazone (3ME)	0.5	DPRE	95	95	98	95	96	98	96	96	98
Clomazone (3ME)	0.6	DPRE	95	96	97	95	96	97	99	96	97
Clomazone (3G)	0.4	DPRE	95	96	98	93	96	98	93	96	98
Clomazone (3G)	0.5	DPRE	93	95	96	91	95	96	83	95	96
Clomazone (3G)	0.6	DPRE	94	96	96	93	96	96	95	96	96
Quinclorac (75DF)	0.38	DPRE	95	95	95	95	95	96	95	95	96
Thiobencarb (8EC)	4.0	DPRE	54	94	93	60	94	93	49	94	95
Pendimethalin (3.3EC)	0.75	DPRE	93	95	96	93	95	96	91	95	98
Clomazone (3ME)	0.2	PPI	94	94	96	94	94	96	98	95	96
Clomazone (3ME)	0.3	PPI	91	96	95	95	95	96	100	94	97
Clomazone (3ME)	0.4	PPI	95	95	97	96	95	97	99	95	97
Clomazone (3ME) + propanil (Stam)	0.2 3.0	EPOST	95	95	97	98	95	97	100	95	97
Clomazone (3ME) + propanil (Stam)	0.4 3.0	EPOST	95	95	97	98	95	97	99	95	97
Clomazone (3ME) + propanil (Stam)	0.6 3.0	EPOST	95	95	98	99	95	98	99	95	98
LSD (0.05)			4	3	3	5	3	3	7	3	2

continued

Table 2. Section 2.

Herbicide	Rate	Application timing	Effect on rice: Injury 5/28	Injury 6/4	Injury 6/18	Stand reduction 5/28	Stand reduction 6/4	Stand reduction 6/18	Stunting 5/28	Stunting 6/4	Stunting 6/18	Yield 9/10
	(lb/A)		(%)									(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	6745
Clomazone (3ME)	0.2	PRE	21	18	6	13	11	0	13	13	0	6663
Clomazone (3ME)	0.3	PRE	34	30	9	26	18	8	13	15	4	6652
Clomazone (3ME)	0.4	PRE	58	51	33	29	20	14	21	23	20	6574
Clomazone (3ME)	0.5	PRE	61	56	25	14	23	26	33	39	35	6322
Clomazone (3ME)	0.6	PRE	76	60	34	16	31	44	34	31	28	6081
Clomazone (3G)	0.4	PRE	35	23	13	11	13	6	18	16	5	7389
Clomazone (3G)	0.5	PRE	41	35	16	14	16	11	19	20	13	6892
Clomazone (3G)	0.6	PRE	44	36	26	11	18	24	18	20	16	6388
Clomazone (3ME)	0.2	DPRE	5	4	1	0	8	1	1	1	1	6790
Clomazone (3ME)	0.3	DPRE	14	9	1	3	8	0	11	9	0	6872
Clomazone (3ME)	0.4	DPRE	16	13	0	10	9	0	16	9	0	6665
Clomazone (3ME)	0.5	DPRE	28	20	3	15	13	0	18	14	0	6818
Clomazone (3ME)	0.6	DPRE	28	23	0	14	10	0	11	15	0	6796
Clomazone (3G)	0.4	DPRE	18	14	1	13	8	0	14	9	1	7394
Clomazone (3G)	0.5	DPRE	18	15	1	9	8	3	8	11	3	7120
Clomazone (3G)	0.6	DPRE	28	21	13	13	15	8	18	18	10	6603
Quinclorac (75DF)	0.38	DPRE	0	3	1	0	0	0	0	0	0	6771
Thiobencarb (8EC)	4.0	DPRE	0	0	0	0	0	0	0	0	0	6125
Pendimethalin (3.3EC)	0.75	DPRE	0	0	0	0	0	0	0	0	0	5918
Clomazone (3ME)	0.2	PPI	21	16	1	14	9	3	14	13	1	6964
Clomazone (3ME)	0.3	PPI	31	23	4	14	11	8	14	18	9	7509
Clomazone (3ME)	0.4	PPI	54	41	21	21	19	21	19	20	15	6470
Clomazone (3ME) + propanil (Stam)	0.2 3.0	EPOST		6	1		13	3		16	3	7066
Clomazone (3ME) + propanil (Stam)	0.4 3.0	EPOST		19	11		13	3		18	13	7087
Clomazone (3ME) + propanil (Stam)	0.6 3.0	EPOST		20	8		14	0		15	10	6458
LSD (0.05)			9	9	8	6	6	8	6	7	7	719

Table 3. Thiobencarb (Bolero) tank mixes and sequential weed control programs in drill-seeded rice, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 16, 1997
Harvest date	September 11, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flushing	May 20 and June 7, 1997
Date of Flood	June 19, 1997

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

Application type	DPRE	EPOST	LPOST
Date applied	May 161997	June 3, 1997	June 18, 1997
Time	7:00 am	4:00 pm	5:00 pm
Incorporation equipment	N/A	N/A	N/A
Air/Soil temperature (F)	76 / 78	71 / 81	86 / 88
Relative humidity (%)	68	89	65
Wind (mph, direction)	1	2	2
Weather	clear	partly cloudy	cloudy
Soil moisture	moist	moist	moist
Crop stage/Height	N/A	2-3 lf / 6"	4-5 lf / 9"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – – – – – –
ECHCG	N/A	2-3 lf / 1-2"	4-5 lf / 3.5"
R-ECHCG	N/A	2-3 lf / 1-2"	4-5 lf / 3"
SEBEX	N/A	2-3 lf / 5"	5 lf / 4.75"
POROL	N/A	N/A	6 lf / 1.4"
BRAPP	N/A	N/A	4 lf / 2.4"

Conclusions: Thiobencarb, when used in program approaches with propanil, propanil + molinate, or quinclorac, provided excellent control of all weed species present. Thiobencarb at 4.0 lb/A tank-mixed with 1.0 lb/A of pendimethalin provided excellent control of resistant and susceptible barnyardgrass, but failed to control hemp sesbania. All yields were significantly greater than the check.

Table 3. Section 1.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/4	6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/4	6/10	6/18
	(lb/A)		(%)												
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0
Thiobencarb +	3.0														
quinclorac	0.5	DPRE	94	96	95	98	93	96	96	89	97	94	96	96	95
Thiobencarb +	2.0														
quinclorac fb	0.5	DPRE													
thiobencarb +	2.0														
(propanil + molinate)	4.5	EPOST	95	98	96	99	96	98	98	96	98	90	96	98	96
Thiobencarb +	4.0														
pendimethalin	1.0	DPRE	91	95	94	96	94	93	94	86	98	98	94	93	84
Pendimethalin fb	1.0	DPRE													
thiobencarb +	3.0														
(propanil + molinate)	4.5	EPOST	94	99	96	95	96	94	99	94	98	96	91	96	93
Thiobencarb +	2.0														
pendimethalin fb	1.0	DPRE													
thiobencarb +	2.0														
propanil (Stam)	3.0	EPOST	94	98	93	96	98	94	96	98	96	99	95	98	96
Thiobencarb +	2.0														
pendimethalin fb	1.0	DPRE													
thiobencarb	2.0														
(propanil + molinate)	4.5	LPOST	93	94	93	96	92	93	94	86	96	95	94	95	86
Thiobencarb +	3.0														
propanil (Stam)	3.0	EPOST		73	73	93	94		83	76	94	94		95	91
Thiobencarb +	3.0														
(propanil + molinate)	4.5	EPOST		70	70	93	98		79	79	90	91		94	86
Thiobencarb +	2.0														
propanil (Stam) fb	3.0	EPOST													
thiobencarb +	2.0														
propanil (Stam)	3.0	LPOST		74	79	89	96		84	80	91	91		91	91
LSD (0.05)			4	9	9	4	4	4	7	8	4	6	4	5	5

continued

Table 3. Section 2.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/4	6/10	6/18	7/1	7/15	Common purslane (POROL) 6/4	6/10	6/18	Rice injury 6/4	6/10	6/18	Rice yield
	(lb/A)							(%)						(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	0	5721
Thiobencarb +	3.0													
quinclorac	0.5	DPRE	93	98	93	96	100	86	94	78	9	0	0	7821
Thiobencarb +	2.0													
quinclorac fb	0.5													
thiobencarb +	2.0													
(propanil + molinate)	4.5	EPOST	94	96	98	96	99	94	98	96	8	5	4	7334
Thiobencarb +	4.0													
pendimethalin	1.0	DPRE	64	61	59	21	21	88	83	78	0	0	1	6924
Pendimethalin fb	1.0													
thiobencarb +	3.0													
(propanil + molinate)	4.5	EPOST	53	93	93	93	90	81	94	96	9	6	4	7208
Thiobencarb +	2.0													
pendimethalin fb	1.0													
thiobencarb +	2.0													
propanil (Stam)	3.0	EPOST	40	95	96	93	94	84	95	93	4	5	5	7170
Thiobencarb +	2.0													
pendimethalin fb	1.0													
thiobencarb	2.0													
(propanil + molinate)	4.5	LPOST	34	36	36	96	100	85	86	83	4	0	3	7284
Thiobencarb +	3.0													
propanil (Stam)	3.0	EPOST		91	94	98	96		90	94		10	5	7080
Thiobencarb +	3.0													
(propanil + molinate)	4.5	EPOST		90	90	94	100		91	91		8	5	6761
Thiobencarb +	2.0													
propanil (Stam) fb	3.0													
thiobencarb +	2.0													
propanil (Stam)	3.0	LPOST		94	91	99	90		98	96		5	5	7458
LSD (0.05)			14	10	9	6	5	10	6	7	4	3	2	920

Table 4. Reduced rate DPRE combinations for barnyardgrass control, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 12, 1997
Harvest date ..... September 11, 1997
Crop/Variety ..... Rice/Kaybonnet
Date of Flushing ..... May 20 and June 7, 1997
Date of Flood ..... June 18, 1997

Comments: DPRE = delayed preemergence.

Application type	DPRE
Date applied	May 16, 1997
Time	6:00 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	75 / 76
Relative humidity (%)	65
Wind (mph, direction)	1
Weather	clear
Soil moisture	moist
Crop stage/Height	N/A
Sprayer type/mph	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20
Gpa / Psi	15 / 28
Weed species	(height / # leaves)
ECHCG	N/A
R-ECHCG	N/A
BRAPP	N/A

Conclusions: Results from this experiment indicate that DPRE mixtures, even at reduced rates, can effectively control resistant barnyardgrass if adequate water is applied for continuous activation. All treatments provided excellent control of resistant and susceptible barnyardgrass except for Bolero at 4.0 lb/A. No treatment caused significant yield reductions.

Table 4. Section 1.

Herbicide	Rate	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/10	6/18	7/15	Barnyardgrass (ECHCG) 6/4	6/10	6/18	7/15
	(lb/A)	(%)							
Treatments applied DPRE:									
Untreated check		0	0	0	0	0	0	0	0
Thiobencarb	4.0	93	84	73	63	91	86	75	78
Pendimethalin	1.0	93	95	91	94	93	94	91	94
Quinclorac	0.25	95	99	95	95	94	95	95	95
Clomazone	0.4	95	96	95	95	95	95	95	95
Thiobencarb +	2.0								
pendimethalin	1.0	95	96	91	95	95	95	91	95
Pendimethalin +	1.0								
quinclorac	0.188	95	100	94	95	95	95	94	95
Thiobencarb +	2.0								
quinclorac	0.188	95	96	93	95	95	95	94	95
Clomazone +	0.3								
thiobencarb	2.0	95	98	95	95	95	95	95	95
Clomazone+	0.3								
pendimethalin	1.0	95	99	95	95	95	95	95	95
Clomazone +	0.3								
quinclorac	0.188	94	96	93	94	94	95	95	95
Thiobencarb +	2.0								
pendimethalin +	1.0								
quinclorac	0.188	95	100	95	95	95	95	95	95
LSD (0.05)		2	3	3	2	2	2	3	4

continued

Table 4. Section 2

Herbicide	Rate	Weed control: Broadleaf signalgrass (BRAPP) 6/4	6/10	6/18	7/15	Rice injury 6/4	6/10	6/18	Rice yield
	(lb/A)	– – – – – – – – – – – – (%) – – – – – – – – – – – –							(lb/A)
Treatments applied DPRE:									
Untreated check		0	0	0	0	0	0	0	6593
Thiobencarb	4.0	91	80	73	70	1	0	3	8056
Pendimethalin	1.0	93	94	89	93	1	0	4	7754
Quinclorac	0.25	95	95	95	95	3	1	4	8218
Clomazone	0.4	95	95	95	95	11	6	3	7884
Thiobencarb + pendimethalin	1.0	95	95	91	95	6	5	5	8442
Pendimethalin + quinclorac	0.188	95	95	95	95	9	5	5	7688
Thiobencarb + quinclorac	0.188	95	95	94	95	0	0	0	8326
Clomazone + thiobencarb	2.0	95	95	95	95	11	5	5	8132
Clomazone+ pendimethalin	1.0	95	95	95	95	8	4	5	7784
Clomazone + quinclorac	0.188	94	94	94	94	0	0	4	7554
Thiobencarb + pendimethalin + quinclorac	0.188	95	95	95	95	6	5	5	7701
LSD (0.05)		2	3	3	5	3	2	2	679

Table 5. Injury to rice and weed control with triclopyr (Grandstand) in rice at three application timings, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 12, 1997
Harvest date	September 11, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flushing	May 20 and June 7, 1997
Date of Flood	June 18, 1997

Comments: EPOST = early postemergence; MPOST = mid-postemergence; PI = panicle initiation.

Application type	EPOST	MPOST	PI
Date applied	June 3, 1997	June 10, 1997	July 8, 1997
Time	6:00 pm	5:00 pm	1:00 pm
Incorporation equipment	N/A	N/A	N/A
Air/Soil temperature (F)	71 / 81	68 / 75	86 / 84
Relative humidity (%)	89	75	81
Wind (mph, direction)	3	4	4
Weather	partly cloudy	cloudy	mostly clear
Soil moisture	moist	moist	flooded
Crop stage/Height	2-3 lf / 5"	3-4 lf / 8"	PI / 23"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – – – –
ECHCG	2-3 lf / 0.5"	3-4 lf / 1.25"	N/A
R-ECHCG	2-3 lf / 0.5"	3-4 lf / 1.25"	N/A
SEBEX	3 lf / 4.5"	5 lf / 5.25"	12 lf / 25"
POROL	4 lf / 0.25"	6 lf / 1"	N/A

Conclusions: Triclopyr alone or in combination with either propanil (Super Wham) or propanil + molinate (Arrosolo) at any timing was effective in controlling hemp sesbania. Earlier application of triclopyr alone (EPOST) or in combination with the propanil formulations (EPOST, MPOST) mentioned above controlled common purslane. There was no data for common purslane control with single treatments of triclopyr or combinations applied at the later PI timing due to lack of infestation after the flood was applied. Barnyardgrass remaining in the treatments of triclopyr alone, MPOST, and triclopyr alone or with propanil, P1 was treated with a salvage treatment of molinate at 5.0 lb ai/A on June 25. Yield data showed that all plants receiving the molinate treatment were injured and suffered reduced yields. Yields from other treatments did not significantly differ from the untreated check.

Table 5. Section 1.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	6/23	Barnyardgrass (ECHCG) 6/10	6/18	6/23	Hemp sesbania (SEBEX) 6/10	6/18	6/23	7/1	7/8	7/29	8/21
	(lb/A)		(%)												
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0
Triclopyr + AG-98 (0.25%)	0.25	MPOST		20	45		23	56		89	100	100	95	100	100
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.19 4.0	EPOST	86	86	76	91	95	86	95	100	100	100	95	98	100
Triclopyr + (propanil + molinate)	0.19 4.0	EPOST	73	85	81	85	89	91	95	100	100	100	93	95	99
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 4.0	MPOST		96	97		98	98		100	100	100	95	96	100
Triclopyr + propanil (Super Wham) + Agri-Dex (1%) fb triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.19 4.0 0.25 1.0	EPOST PI	79	85	76	93	95	89	95	100	99	100	95	98	100
Triclopyr + propanil (Super Wham) + Agri-Dex (1%) fb triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 4.0 0.25 1.0	MPOST PI		95	95		98	96		100	100	100	95	99	100
Triclopyr + AG-98 (0.25%)	0.25	PI												88	89

continued

Table 5. Section 1. Continued.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	6/23	Barnyardgrass (ECHCG) 6/10	6/18	6/23	Hemp sesbania (SEBEX) 6/10	6/18	6/23	7/1	7/8	7/29	8/21
	(lb/A)		(%)												
Triclopyr + AG-98 (0.25%)	0.38	PI												95	100
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 1.0	PI												95	100
Triclopyr + propanil (Super Wham) + Agri-Dex 1%)	0.38 1.0	PI												94	100
Triclopyr + propanil + molinate	0.25 1.0	PI												95	100
LSD (0.05			9	10	11	6	9	13	0	5	1	0	3	5	2

Table 5. Section 2.

Herbicide	Rate	Application timing	Weed control: Common purslane (POROL) 6/18	6/23	7/8	Rice injury 6/10	6/18	6/23	7/1	7/8	7/29	Rice yield
	(lb/A)					(%)						(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	7092
Triclopyr + AG-98 (0.25%)	0.25	MPOST	89	100	95		10	16	14	33	16	5100
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.19 4.0	EPOST	100	100	95	14	9	1	9	5	0	7245
Triclopyr + (propanil + molinate)	0.19 4.0	EPOST	100	100	95	10	8	5	11	5	0	7123

continued

Table 5. Section 2. Continued.

Herbicide	Rate	Application timing	Weed control: Common purslane (POROL) 6/18	6/23	7/8	Rice injury 6/10	6/18	6/23	7/1	7/8	7/29	Rice yield
	(lb/A)					(%)						(lb/A)
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 4.0	MPOST	100	100	95		14	20	5	14	4	6664
Triclopyr + propanil (Super Wham) + Agri-Dex (1%) fb triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.19 4.0 EPOST 0.25 1.0	PI	100	100	95	11	10	5	5	6	0	6982
Triclopyr + propanil (Super Wham) + Agri-Dex (1%) fb triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 4.0 MPOST 0.25 1.0	PI	100	100	93		15	19	9	8	1	6869
Triclopyr + AG-98 (0.25%)	0.25	PI									18	5259
Triclopyr + AG-98 (0.25%)	0.38	PI									20	4992
Triclopyr + propanil (Super Wham) + Agri-Dex (1%)	0.25 1.0	PI									18	5508
Triclopyr + propanil (Super Wham) + Agri-Dex 1%)	0.38 1.0	PI									9	5429
Triclopyr + propanil + molinate	0.25 1.0	PI									10	5768
LSD (0.05)			3	0	2	3	3	6	9	6	5	736

Table 6. Nutsedge control with halosulfuron (Permit) in rice, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 12, 1997
Harvest date	September 11, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flushing	May 20 and June 7, 1997
Date of Flood	June 18, 1997

Comments: EPOST = early postemergence and POFL = post-flood.

Application type	EPOST	POFL
Date applied	June 3, 1997	June 23, 1997
Time	6:00 pm	9:15 pm
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	71 / 81	87 / 84
Relative humidity (%)	89	80
Wind (mph, direction)	3	2
Weather	partly cloudy	clear
Soil moisture	moist	flooded
Crop stage/Height	2-3 lf / 5"	5-6 lf / 14"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28
Weed species	– – – – – – – – – – (height / # leaves)	– – – – – – – – – –
CYPES	2 lf / 4"	6-8 lf / 12"

Conclusions: Halosulfuron applied alone EPOST at 0.047, 0.062, and 0.094 lb/A controlled yellow nutsedge better than bentazon or bensulfuron. Halosulfuron + triclopyr applied EPOST also showed better control than did bentazon or bensulfuron, with excellent control of up to 93% at 5 weeks after treatment. There were no significant differences in yields.

Table 6.

Herbicide	Rate	Application timing	Yellow nutsedge (CYPES) control 6/10	6/23	7/8	Effect on rice: Stunting 6/10	6/23	7/8	Injury 6/10	6/23	7/8	Yield 9/11
	(lb/A)		(%)									(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	6409
Halosulfuron +	0.047											
Induce (0.25%)		EPOST	66	58	83	0	1	0	0	0	0	6446
Halosulfuron +	0.062											
Induce (0.25%)		EPOST	79	84	88	9	8	0	0	0	0	6309
Halosulfuron +	0.094											
Induce (0.25%)		EPOST	84	84	91	4	6	0	0	0	1	6291
Bentazon +	0.75											
Agri-Dex (1%)		EPOST	69	63	75	0	3	0	0	0	0	6507
Bentazon +	0.06											
Agri-Dex (1%)		EPOST	53	39	66	0	3	0	0	0	1	6600
Halosulfuron +	0.047											
triclopyr +	0.25											
Induce (0.25%)		EPOST	85	90	93	13	11	9	9	6	3	6322
Halosulfuron +	0.047											
Induce (0.25%)		POFL			68			0			3	6710
Halosulfuron +	0.062											
Induce (0.25%)		POFL			70			0			8	6414
Halosulfuron +	0.094											
Induce (0.25%)		POFL			83			5			9	6163
Bentazon +	0.75											
Agri-Dex (1%)		POFL			58			0			0	6341
Halosulfuron +	0.047											
triclopyr +	0.25											
Induce (0.25%)		POFL			83			11			10	5981
LSD (0.05)			9	25	12	4	5	2	4	1	3	NS

Table 7. Weed control with propanil formulations in EPOST programs, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7.5 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 12, 1997
Harvest date	September 10, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flushing	May 20 and June 7, 1997
Date of Flood	June 19, 1997

Comments: EPOST = early postemergence; LPOST = late postemergence; and EDF = dry flowable formulation.

Application type	EPOST	LPOST
Date applied	June 3, 1997	June 18, 1997
Time	4:00 pm	5:00 pm
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	78 / 85	86 / 88
Relative humidity (%)	82	65
Wind (mph, direction)	4	2
Weather	partly cloudy	clear
Soil moisture	moist	moist
Crop stage/Height	2-3 lf / 5"	4-5 lf / 9"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – (height / # leaves)– – – – – – – – – –	
R-ECHCG	2-3 lf / 0.5"	4-5 lf / 2.4"
ECHCG	2-3 lf / 0.5"	4-5 lf / 2.4"
BRAPP	2-3 lf / 0.5"	4-5 lf / 2"

Conclusions: This study was conducted to compare the effectiveness of the different propanil formulations on resistant and susceptible barnyardgrass and broadleaf signalgrass. The two Stam formulations (M-4 and 80 EDF) were weak on the resistant barnyardgrass. Super Wham had slightly more activity than the other Stam formulations, and Arrosolo and propanil + carbaryl gave good control at 3.0 and 4.0 lb/A. Super Wham alone and in combination with Bolero gave good control of all grasses, as did propanil and residual herbicides. Stam at 3.0 lb/A + carbaryl had the highest injury and reduced yield at the single and sequential application timings. Most other treatments did not significantly reduce yields.

Table 7. Section 1.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/10	6/18	7/1	7/15
	(lb/A)		(%)											
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0
Propanil (Stam M-4)	4.0	EPOST	78	76	64	64	89	91	98	84	95	98	98	94
Propanil (Stam 80EDF) + AG-98 (0.25%)	4.0	EPOST	68	45	28	40	89	95	93	89	94	99	98	95
Propanil (Super Wham) + Agri-Dex (1%)	4.0	EPOST	73	79	93	63	94	95	99	94	95	98	99	95
(Propanil + molinate)	6.0	EPOST	88	93	95	95	95	99	98	95	95	99	98	95
Propanil (Stam M-4) + carbaryl	4.0 0.1	EPOST	91	98	99	95	94	98	99	95	95	98	99	95
Propanil (Stam (M-4) fb propanil (Stam M-4)	3.0 3.0	EPOST LPOST	54	63	61	51	93	95	99	91	93	98	99	95
Propanil (Stam 80EDF) + AG-98 (0.25%) fb propanil (Stam 80EDF) + AG-98 (0.25%)	3.0 3.0	EPOST LPOST	84	79	66	60	94	89	98	91	94	95	99	95
Propanil (Super Wham) + Agri-Dex (1%) fb propanil (Super Wham) + Agri-Dex (1%)	3.0 3.0	EPOST LPOST	86	91	99	95	94	98	99	95	95	99	99	95
(Propanil + molinate) fb (propanil + molinate)	4.5 4.5	EPOST LPOST	90	94	95	95	94	95	99	95	95	99	99	95
Propanil (Stam M-4) + carbaryl fb propanil (Stam M-4) + carbaryl	3.0 0.1 3.0 0.1	EPOST LPOST	95	99	99	95	95	99	99	95	95	99	99	95

continued

Table 7. Section 1. Continued

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/10	6/18	7/1	7/15
	(lb/A)		(%)											
Propanil (Super Wham) + thiobencarb + Agri-Dex (1%) fb propanil (Super Wham) + thiobencarb + Agri-Dex (1%)	3.0 1.0 EPOST 3.0 1.0	LPOST	94	96	100	95	94	98	100	95	95	99	100	95
Quinclorac + Agri-Dex (1%)	0.125	EPOST	78	90	98	95	69	91	99	95	50	98	99	95
Quinclorac + Agri-Dex (1%)	0.25	EPOST	75	95	96	95	76	95	96	95	36	98	96	95
Quinclorac + Agri-Dex (1%)	0.375	EPOST	95	91	100	94	65	90	100	95	54	96	100	95
Propanil (Stam M-4) + quinclorac	3.0 0.125	EPOST	78	90	100	95	88	93	100	95	94	98	100	95
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	3.0 0.125	EPOST	93	99	96	95	95	99	100	95	95	99	100	95
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	3.0 0.125	EPOST	90	96	100	95	95	99	100	95	95	99	100	95
(Propanil + molinate) + quinclorac	4.5 0.125	EPOST	94	98	100	95	93	98	100	95	95	99	100	95
Propanil (Stam M-4) + carbaryl + quinclorac	3.0 0.1 0.125	EPOST	95	99	100	95	95	99	100	95	95	99	100	95
Propanil (Stam M-4) + quinclorac	3.0 0.25	EPOST	74	56	79	53	81	81	95	86	88	96	99	95
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	3.0 0.25	EPOST	94	99	100	95	94	99	100	95	95	99	100	98

continued

Table 7. Section 1. Continued

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/10	6/18	7/1	7/15
	(lb/A)		(%)											
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	3.0 + 0.25	EPOST	95	98	100	95	95	99	100	95	95	99	100	95
(Propanil + molinate) + quinclorac	4.5 + 0.25	EPOST	94	99	100	95	95	99	100	95	95	99	100	95
Propanil (Stam M-4) + carbaryl + quinclorac	3.0 + 0.1 + 0.25	EPOST	94	95	96	64	94	96	96	81	94	98	96	95
Propanil (Stam M-4)	3.0	EPOST	85	83	75	64	88	90	93	88	89	96	99	95
Propanil (Stam 80EDF) + AG-98 (0.25%)	3.0	EPOST	75	66	78	59	78	76	99	71	86	95	100	95
Propanil (Super Wham) + Agri-Dex (1%)	3.0	EPOST	88	94	100	93	91	96	100	95	95	98	100	95
(Propanil + molinate)	4.5	EPOST	86	94	100	91	93	98	100	95	95	99	100	95
Propanil (Stam M-4) + carbaryl	3.0 + 0.1	EPOST	95	99	100	95	95	99	100	95	95	99	100	95
Propanil (Stam M-4) + thiobencarb	3.0 + 3.0	EPOST	92	95	100	95	94	96	100	95	95	98	100	95
Propanil (Stam 80EDF) + thiobencarb + AG-98 (0.25%)	3.0 + 3.0	EPOST	93	95	100	95	94	98	100	95	95	99	100	95
Propanil (Super Wham) + thiobencarb + Agri-Dex (1%)	3.0 + 3.0	EPOST	69	90	96	94	69	91	100	94	46	94	94	95
(Propanil + molinate) + thiobencarb	4.5 + 3.0	EPOST	85	95	100	95	86	96	100	95	91	99	100	95
Propanil (Stam (M-4) + carbaryl + thiobencarb	3.0 + 0.1 + 3.0	EPOST	95	99	99	95	95	99	99	95	95	99	99	95
Propanil (Stam M-4) + pendimethalin	3.0 + 1.0	EPOST	85	95	100	95	85	96	100	95	93	99	100	95

continued

Table 7. Section 1. Continued

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/10	6/18	7/1	7/15
	(lb/A)		(%)											
Propanil (Stam 80EDF) + pendimethalin + AG-98 (0.25%)	3.0 + 1.0 + 1.0	EPOST	81	94	100	94	88	98	100	95	94	99	100	95
Propanil (Super Wham) + pendimethalin + Agri-Dex (1%)	3.0 + 1.0	EPOST	88	98	100	95	90	99	100	95	94	99	100	95
(Propanil + molinate) + pendimethalin	4.5 + 1.0	EPOST	83	98	99	95	89	99	99	95	91	99	99	95
Propanil (Stam M-4) + carbaryl + pendimethalin	3.0 + 0.1 + 1.0	EPOST	94	99	100	95	95	99	100	95	95	99	100	95
Propanil (Stam M-4) + quinclorac	2.0 + 0.125	EPOST	69	69	91	73	74	79	100	85	71	96	100	95
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	2.0 + 0.125	EPOST	78	69	96	64	80	81	100	86	80	95	100	95
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	2.0 + 0.125	EPOST	85	96	100	95	90	96	100	95	94	99	100	95
(Propanil + molinate) + quinclorac	3.0 + 0.125	EPOST	88	94	100	95	94	95	100	95	95	99	100	95
Propanil (Stam M-4) + carbaryl + quinclorac	2.0 + 0.1 + 0.125	EPOST	91	99	100	95	95	99	100	95	95	99	100	95
Propanil (Stam M-4) + quinclorac	2.0 + 0.25	EPOST	86	94	100	95	88	95	100	95	95	99	100	95
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	2.0 + 0.25	EPOST	93	96	100	95	93	96	100	95	95	98	100	95

continued

Table 7. Section 1. Continued

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/10	6/18	7/1	7/15	Barnyardgrass (ECHCG) 6/10	6/18	7/1	7/15	Broadleaf signalgrass (BRAPP) 6/10	6/18	7/1	7/15
	(lb/A)		(%)											
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	2.0 + 0.25	EPOST	94	99	100	95	94	98	100	95	95	99	100	95
(Propanil + molinate) + quinclorac	3.0 + 0.25	EPOST	91	99	100	95	93	99	100	95	95	100	100	95
Propanil (Stam M-4) + carbaryl + quinclorac	2.0 + 0.1 + 0.25	EPOST	95	100	100	95	95	100	100	95	95	100	100	95
LSD (0.05)			9	10	8	11	7	7	4	8	7	3	3	0

continued

Table 7. Section 2.

Herbicide	Rate	Application timing	Rice injury 6/10	6/18	7/1	7/15	Rice yield
	(lb/A)		(%)				(lb/A)
Untreated check			0	0	0	0	5228
Propanil (Stam M-4)	4.0	EPOST	20	9	0	0	6624
Propanil (Stam 80EDF) + AG-98 (0.25%)	4.0	EPOST	14	4	1	0	6873
Propanil (Super Wham) + Agri-Dex (1%)	4.0	EPOST	16	9	0	0	6798
(Propanil + molinate)	6.0	EPOST	21	10	3	1	7174
Propanil (Stam M-4) + carbaryl	4.0 + 0.1	EPOST	41	13	0	0	6296
Propanil (Stam (M-4) fb propanil (Stam M-4)	3.0 fb 3.0	EPOST LPOST	13	8	0	1	6600

continued

Table 7. Section 2. Continued.

Herbicide	Rate	Application timing	Rice injury 6/10	6/18	7/1	7/15	Rice yield
	(lb/A)		(%)				(lb/A)
Propanil (Stam 80EDF) +	3.0						
AG-98 (0.25%) fb		EPOST					
propanil (Stam 80EDF) +	3.0						
AG-98 (0.25%)		LPOST	10	10	3	0	6636
Propanil (Super Wham) +	3.0						
Agri-Dex (1%) fb		EPOST					
propanil (Super Wham) +	3.0						
Agri-Dex (1%)		LPOST	20	8	5	0	6867
(Propanil + molinate) fb	4.5	EPOST					
(propanil + molinate)	4.5	LPOST	19	14	5	0	6641
Propanil (Stam M-4) +	3.0						
carbaryl fb	0.1	EPOST					
propanil (Stam M-4) +	3.0						
carbaryl	0.1	LPOST	53	25	33	8	5512
Propanil (Super Wham) +	3.0						
thiobencarb +	1.0						
Agri-Dex (1%) fb		EPOST					
propanil (Super Wham) +	3.0						
thiobencarb +	1.0						
Agri-Dex (1%)		LPOST	13	6	1	0	6717
Quinclorac +	0.125						
Agri-Dex (1%)		EPOST	4	5	0	0	6526
Quinclorac +	0.25						
Agri-Dex (1%)		EPOST	4	3	0	0	6358
Quinclorac +	0.375						
Agri-Dex (1%)		EPOST	0	3	0	0	5811
Propanil (Stam M-4) +	3.0						
quinclorac	0.125	EPOST	11	5	0	0	7002
Propanil (Stam 80EDF) +	3.0						
quinclorac +	0.125						
AG-98 (0.25%)		EPOST	14	9	1	0	6311

continued

Table 7. Section 2. Continued.

Herbicide	Rate	Application timing	Rice injury 6/10	6/18	7/1	7/15	Rice yield
	(lb/A)		(%)				(lb/A)
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	3.0 + 0.125	EPOST	14	8	0	0	6810
(Propanil + molinate) + quinclorac	4.5 + 0.125	EPOST	18	8	1	0	6226
Propanil (Stam M-4) + carbaryl + quinclorac	3.0 + 0.1 + 0.125	EPOST	39	13	0	0	6419
Propanil (Stam M-4) + quinclorac	3.0 + 0.25	EPOST	10	8	0	0	6207
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	3.0 + 0.25	EPOST	8	6	1	0	6863
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	3.0 + 0.25	EPOST	14	4	3	0	6325
(Propanil + molinate) + quinclorac	4.5 + 0.25	EPOST	20	8	0	0	6643
Propanil (Stam M-4) + carbaryl + quinclorac	3.0 + 0.1 + 0.25	EPOST	43	14	0	1	6250
Propanil (Stam M-4)	3.0	EPOST	14	6	0	0	7066
Propanil (Stam 80EDF) + AG-98 (0.25%)	3.0	EPOST	5	5	1	0	6111
Propanil (Super Wham) + Agri-Dex (1%)	3.0	EPOST	24	13	3	0	6426
(Propanil + molinate)	4.5	EPOST	23	11	3	0	7077
Propanil (Stam M-4) + carbaryl	3.0 + 0.1	EPOST	73	69	49	20	4739
Propanil (Stam M-4) + thiobencarb	3.0 + 3.0	EPOST	28	10	0	0	6677

continued

Table 7. Section 2. Continued.

Herbicide	Rate	Application timing	Rice injury 6/10	6/18	7/1	7/15	Rice yield
	(lb/A)		(%)				(lb/A)
Propanil (Stam 80EDF) + thiobencarb + AG-98 (0.25%)	3.0 3.0	EPOST	23	9	0	0	6004
Propanil (Super Wham) + thiobencarb + Agri-Dex (1%)	3.0 3.0	EPOST	5	1	3	0	6377
(Propanil + molinate) + thiobencarb	4.5 3.0	EPOST	18	9	1	0	6323
Propanil (Stam (M-4) + carbaryl + thiobencarb	3.0 0.1 3.0	EPOST	45	11	0	0	6407
Propanil (Stam M-4) + pendimethalin	3.0 1.0	EPOST	15	10	4	1	6482
Propanil (Stam 80EDF) + pendimethalin + AG-98 (0.25%)	3.0 1.0	EPOST	15	8	0	0	6836
Propanil (Super Wham) + pendimethalin + Agri-Dex (1%)	3.0 1.0	EPOST	16	6	0	0	6561
(Propanil + molinate) + pendimethalin	4.5 1.0	EPOST	15	10	3	0	6021
Propanil (Stam M-4) + carbaryl + pendimethalin	3.0 0.1 1.0	EPOST	65	23	4	3	6011
Propanil (Stam M-4) + quinclorac	2.0 0.125	EPOST	10	8	1	0	6589
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	2.0 0.125	EPOST	8	4	1	0	6873
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	2.0 0.125	EPOST	9	5	1	0	6666

continued

Table 7. Section 2. Continued.

Herbicide	Rate	Application timing	Rice injury 6/10	6/18	7/1	7/15	Rice yield
	(lb/A)		(%)				(lb/A)
(Propanil + molinate) + quinclorac	3.0 0.125	EPOST	11	5	0	0	6622
Propanil (Stam M-4) + carbaryl + quinclorac	2.0 0.1 0.125	EPOST	38	10	3	0	6567
Propanil (Stam M-4) + quinclorac	2.0 0.25	EPOST	14	9	1	0	6580
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	2.0 0.25	EPOST	5	1	1	0	6620
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	2.0 0.25	EPOST	10	4	0	0	6858
(Propanil + molinate) + quinclorac	3.0 0.25	EPOST	11	5	0	0	6402
Propanil (Stam M-4) + carbaryl + quinclorac	2.0 0.1 0.25	EPOST	43	15	3	0	6445
LSD (0.05)			8	6	6	2	883

Table 8. Comparison of microencapsulated formulations of pendimethalin (Prowl) for weed control in rice, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 12, 1997
Harvest date	September 10, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flushing	June 28, July 4, July 8, July 16, July 21 and July 25, 1997
Date of Flood	July 28, 1997

Comments: DPRE = delayed preemergence.

Application type	DPRE
Date applied	July 1, 1997
Time	5:30 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	87 / 90
Relative humidity (%)	80
Wind (mph, direction)	4
Weather	mostly clear
Soil moisture	wet
Crop stage/Height	rad. / 0.5"
Sprayer type/mph	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20
Gpa / Psi	15 / 28

Conclusions: Studies were conducted to evaluate microencapsulated (ME) formulations of pendimethalin (Prowl) for mixing and spraying qualities and for weed control as compared to the EC formulation. Herbicidal activity of the ME formulations was comparable to the EC formulation. Some differences in yield were observed, with the EC formulation and AC-166,773 having the highest yields with no significant difference between them. Mixing qualities of all ME formulations were excellent and the spray solution did not stain the tank or equipment.

Table 8.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 7/8	7/29	8/21	Barnyardgrass (ECHCG) 7/8	7/29	8/21	Rice flatsedge (CYPIR) 7/8	Rice injury 7/8	7/29	8/21	Yield 10/17
	(lb/A)		– (%) –										(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	4063
Pendimethalin (3.3 EC)	1.0	DPRE	91	94	89	91	91	91	93	0	0	0	6039
97 AC-166,746	1.0	DPRE	91	91	84	90	94	88	84	0	0	0	4930
97 AC-513,981	1.0	DPRE	90	91	84	91	91	85	74	0	0	0	4903
97 AC-513,982	1.0	DPRE	93	95	90	91	96	89	75	0	0	0	4897
97 AC-166,747	1.0	DPRE	93	98	93	93	96	94	91	0	0	0	5431
97 AC-166,773	1.0	DPRE	94	96	91	90	95	90	94	0	0	0	5752
LSD (0.05)			3	6	8	4	6	9	11	NS	NS	NS	371

Table 9. Yield study for halosulfuron in rice, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 5
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 8, 1997
Harvest date ..... August 10, 1997
Crop/Variety ..... Rice/Kaybonnet
Date of Flushing ..... May 17 and June 7, 1997
Date of Flood ..... June 17, 1997

Comments: PRE = preemergence; EPOST =early postemergence; MPOST = mid postemergence; and POFL = postflood.

Application type	PRE	EPOST	MPOST	POFL
Date applied	May 8, 1997	May 28, 1997	June 3, 1997	June 18, 1997
Time	6:00 pm	3:00 pm	5:00 pm	5:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	81 / 79	71 / 77	71 / 81	86 / 88
Relative humidity (%)	83	78	89	65
Wind (mph, direction)	3	4	3	2
Weather	partly cloudy	couldy	partly cloudy	mostly clear
Soil moisture	moist	wet	moist	wet
Crop stage/Height	N/A	2-3 lf / 5"	3-4 lf / 7"	5-6 lf / 10"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 40	15 / 28	15 / 28	15 / 28

Conclusions: Halosulfuron was evaluated for its effect on rice yield. Quinclorac at 0.38 lb/A was applied DPRE to control grasses and broadleaves early in the experiment. Injury of up to 15% was observed as growth reduction in rice at all halosulfuron rates and timings. The rice recovered from halosulfuron injury and there was no significant reduction in yield.

Table 9.

Herbicide	Rate	Application timing	Rice injury 6/3	6/18	6/23	7/1	7/8	7/15	Stunting 6/3	6/18	6/23	7/1	7/8	7/15	Rice yield 8/10
	(lb/A)		– – – – – – – – – – – – (%) – – – – – – – – – – – –												(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	2	0	7132
Halosulfuron	0.062	PRE	8	2	0	0	0	0	13	11	5	7	4	1	6950
Halosulfuron	0.124	PRE	5	0	0	0	0	0	6	4	1	7	1	0	7422
Halosulfuron + Induce (0.25%)	0.062	EPOST	3	1	0	0	0	0	10	5	7	9	1	0	7651
Halosulfuron + Induce (0.25%)	0.124	EPOST	4	2	0	0	0	0	14	15	8	11	4	0	7296
Halosulfuron + Induce (0.25%)	0.062	MPOST		3	0	0	0	0		16	8	6	3	0	6947
Halosulfuron + Induce (0.25%)	0.124	MPOST		1	0	0	0	0		4	0	2	2	0	7831
Halosulfuron + Induce (0.25%)	0.062	POFL			0	0	0	0			1	6	2	0	7556
Halosulfuron + Induce (0.25%)	0.124	POFL			0	0	0	0			12	4	1	0	6719
Halosulfuron + Induce (0.25%) fb halosulfuron + Induce (0.25%)	0.062 fb 0.047	EPOST fb MPOST	2	1	0	0	0	0	12	13	7	11	1	0	7244
Halosulfuron + Induce (0.25%) fb halosulfuron + Induce (0.25%)	0.062 fb 0.062	EPOST fb POFL	7	4	0	0	0	0	16	13	10	11	3	0	6938
Halosulfuron + Induce (0.25%) fb halosulfuron + Induce (0.25%)	0.062 fb 0.047	MPOST fb POFL		1	0	0	0	0		1	2	2	2	0	7094
LSD (0.05%)			NS	NS	NS	NS	NS	NS	5	7	6	5	NS	NS	NS

Table 10. Evaluation of F8426 applied EPOST to water-seeded rice at two flood depths, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 12, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice/Kaybonnet
Date of Flushing ..... May 20 and June 7, 1997
Date of Flood ..... June 18, 1997

Comments: POFL = postflood and POFL2 = second postflood application.

Application type	POFL	POFL2
Date applied	July 1, 1997	July 8, 1997
Time	5:30 pm	1:00 pm
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	87 / 86	86 / 84
Relative humidity (%)	80	81
Wind (mph, direction)	4	4
Weather	mostly clear	mostly clear
Soil moisture	flooded	flooded
Crop stage/Height	6-9 lf / 18"	8-9 lf / 24"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – –	
SEBEX	6-8 lf / 15"	9-lf / 17"
IPOWR	9-10 lf / 12"	10 lf / 13"
CYPES	7-8 lf / 16"	8-9 lf / 17"

Conclusions: F-8426 (carfentrazone) provided excellent control of palmleaf morningglory, yellow nutsedge, and hemp sesbania at a rate range of 0.025 to 0.15 lb/A. Slight phytotoxicity to rice occurred early following application, but the rice recovered 4 weeks after treatment. Little if any stand reduction occurred from any of the treatments of F-8426, and only 4 to 16% stunting was observed.

Table 10.

Herbicide	Rate	Application timing	Palmleaf morningglory (IPOWR) 7/15	Palmleaf morningglory (IPOWR) 8/13	Yellow nutsedge (CYPES) 7/15	Yellow nutsedge (CYPES) 8/13	Hemp sesbania (SEBEX) 7/15	Hemp sesbania (SEBEX) 8/13	Effect on rice: Injury 7/29	Injury 8/13	Stand reduction 7/29	Stand reduction 8/13	Stunting 7/29	Stunting 8/13	Stunting 8/21
	(lb/A)		– – – – – – – – – – – – – – – – – – – –						(%)						
1-inch flood:															
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0
F8426-2	0.025	POFL	95	94	94	95	75	88	6	0	1	0	0	3	10
F8426-2	0.05	POFL	95	94	93	85	94	93	11	0	0	0	0	4	16
F8426-2	0.075	POFL	95	95	94	95	95	94	13	0	0	1	0	5	16
F8426-2	0.1	POFL	95	95	93	93	95	95	15	0	4	1	0	4	11
F8426-2	0.15	POFL	95	95	93	95	95	95	14	0	4	1	0	4	13
3-inch flood:															
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0
F8426-2	0.025	POFL2	95	95	93	95	95	95	6	0	0	3	0	5	5
F8426-2	0.05	POFL2	95	95	95	95	95	95	8	0	0	0	0	6	10
F8426-2	0.075	POFL2	95	95	94	94	95	95	9	0	0	1	0	5	4
F8426-2	0.1	POFL2	95	95	93	95	95	95	16	0	0	0	0	8	14
F8426-2	0.15	POFL2	95	95	93	91	95	95	16	0	3	0	0	5	5
LSD (0.05)			1	2	4	5	9	5	5	NS	2	NS	NS	2	6

Table 11. Evaluation of F-8426 40 EDF alone and in combination with various herbicides, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 16 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... May 12, 1997
Harvest date ..... September 11, 1997
Crop/Variety ..... Rice/Kaybonnet
Date of Flush ..... May 20 and June 7, 1997
Date of Flood ..... June 19, 1997

Comments: LPOST = late postemergence.

Application type	LPOST
Date applied	June 18, 1997
Time	6:00 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	86 / 88
Relative humidity (%)	65
Wind (mph, direction)	2
Weather	mostly clear
Soil moisture	moist
Crop stage/Height	4-5 lf / 9"
Sprayer type/mph	BkPkCO_2 / 3
Nozzle type/Size	Teejet / XR11002
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20
Gpa / Psi	15 / 28
Weed species	(height / # leaves)
SEBEX	5 lf / 5"
CYPES	3-4 lf / 2.4"

Conclusions: F-8426 (carfentrazone) was evaluated alone and in combination with propanil and bensulfuron for control of hemp sesbania and yellow nutsedge. All rates of F-8426 alone and in tank mixes controlled hemp sesbania >95%. Control of yellow nutsedge ranged from fair (68%) with F-8426 alone at 0.01 lb ai/A to good (93%) with F-8426 at 0.02 lb ai/A + bensulfuron at 0.06 lb ai/A. No significant stand reduction or stunting was observed with any F-8426 treatment, and yields did not differ significantly among treatments.

Table 11.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/23	7/1	7/7	7/29	Weed control: Yellow nutsedge (CYPES) 6/23	7/1	7/7	7/29	Effect on rice: Injury 6/23	7/1	7/7	Stand reduction 7/29	Stunting 7/29	Yield 9/11
	(lb/A)		(%)													(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	6459
F-8426 +	0.005															
X-77 (0.25%)		LPOST	88	95	95	99	63	79	78	73	0	0	0	0	0	7160
F-8426 +	0.01															
X-77 (0.25%)		LPOST	94	95	95	98	66	78	78	68	0	0	0	0	0	6670
F-8426 +	0.02															
X-77 (0.25%)		LPOST	95	95	95	98	69	83	83	80	0	0	0	0	0	6951
F-8426 +	0.03															
X-77 (0.25%)		LPOST	95	95	95	99	68	88	84	83	0	0	0	0	0	6656
F-8426 + propanil	0.02															
(Stam M-4)	1.0	LPOST	95	95	95	99	74	85	84	79	0	0	0	0	0	7105
F-8426 + propanil	0.02															
(Stam M-4)	2.0	LPOST	95	95	95	99	83	90	93	86	1	0	1	1	0	6954
F-8426 + propanil	0.02															
(Stam M-4)	4.0	LPOST	95	95	95	99	79	90	94	91	1	0	0	0	0	7297
F-8426 +	0.02															
bensulfuron +	0.015															
X-77 (0.25%)		LPOST	95	94	94	95	75	89	91	85	0	1	1	0	0	6555
F-8426 +	0.02															
bensulfuron +	0.03															
X-77 (0.25%)		LPOST	94	94	94	98	71	89	94	91	1	0	0	0	0	7383
F-8426 +	0.02															
bensulfuron +	0.06															
X-77 (0.25%)		LPOST	95	95	95	100	68	90	95	93	1	1	1	0	0	7044
Thiobencarb	4.0	LPOST	55	94	89	91	61	90	90	86	1	0	0	0	0	6565
(Propanil + molinate)	6.0	LPOST	93	95	95	100	85	84	85	85	3	0	0	0	0	7105
Propanil (Stam M-4)	4.0	LPOST	89	95	95	100	86	89	93	89	1	0	0	0	0	6516
Quinclorac +	0.38															
Agri-Dex (1%)		LPOST	74	95	95	99	55	88	79	80	0	3	3	0	1	6709
Triclopyr +	0.22															
X-77 (0.25%)		LPOST	70	91	90	93	69	84	85	70	21	15	9	0	11	6934
LSD (0.05)			6	3	5	6	11	8	11	13	2	3	2	NS	2	NS

Table 12. Weed control with quinclorac (Facet) formulations (granule and dry flowable) at various timings and suitability of pendimethalin as a quinclorac partner for weed control in rice, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	RCB / 4
Plot size	6 ft by 16 ft
Row width / Number of rows per plot	7 in / 9 rows
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 8, 1997
Harvest date	September 10, 1997
Crop/Variety	Rice/Kaybonnet
Date of Flush	May 17 and June 7, 1997
Date of Flood	June 16, 1997

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; LPOST = late postemergence; GR = granules; DF = dry flowable; and EC = emulsifiable concentrate. Quinclorac formulations were 1.5% granules and a 75% DF. Pendimethalin formulations were a 60% DF (Pentagon) and a 3.3 EC (Prowl).

Application type	PRE	DPRE	EPOST	LPOST
Date applied	May 8, 1997	May 13, 1997	May 28, 1997	June 10, 1997
Time	5:00 pm	6:00 pm	3:00 pm	6:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	77 / 78	75 / 76	71 / 77	68 / 75
Relative humidity (%)	83	65	78	75
Wind (mph, direction)	3	2	4	4
Weather	partly cloudy	clear	cloudy	cloudy
Soil moisture	moist	moist	wet	moist
Crop stage/Height	N/A	N/A	2-3 lf / 5"	4-5 lf / 8"
Sprayer type/mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type/Size	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015	Teejet / XR110015
Boom ht / # Noz / Spacing (in.)	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20	16 / 3 / 20
Gpa / Psi	15 / 28	15 / 28	15 / 28	15 / 28
Weed species	– – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – –			
ECHCG	N/A	N/A	2-3 lf / 0.5"	4-6 lf / 3"
R-ECHCG	N/A	N/A	2-3 lf / 0.75"	4-6 lf / 3.5"

Conclusions: The G and DF formulations of quinclorac were compared at 0.38 lb/A, the standard rate for a silt loam soil. No differences were observed by July 1 in resistant- and susceptible-barnyardgrass control at the PRE, DPRE and EPOST timings. Also, there was no rate response in barnyardgrass activity of granular quinclorac at 0.25 to 0.5 lb/A. In evaluating the 60 DF formulation of pendimethalin as a tank-mix partner with quinclorac (DF), no significant differences in weed control or yield were found at any rate or application timing by mid-season ratings on July 29. No yield differences occurred between the 60 DF and 3.3 EC formulations of pendimethalin tank-mixed with quinclorac (DF) at 0.38 or 0.5 lb/A.

Table 12.

			Weed control										Rice injury			Rice yield
			Resistant barnyardgrass (R-ECHCG)					Barnyardgrass (ECHCG)								
Herbicide	Rate	Application timing	6/4	6/23	6/18	7/1	7/29	6/4	6/23	6/18	7/1	7/29	6/4	6/18	6/23	8/10
	(lb/A)		– – – – – – – – – – – – – – – – – – – –						(%)				– – – – – – – – – – – – – – – – – – – –			(lb/A)
Block 1																
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	5798
Quinclorac (1.5 GR)	0.25	PRE	94	94	88	100	95	94	94	89	100	95	9	0	0	6733
Quinclorac (1.5 GR)	0.38	PRE	96	95	94	100	96	96	95	94	100	99	13	0	1	7090
Quinclorac (1.5 GR)	0.5	PRE	96	95	95	100	99	96	95	95	100	98	14	4	4	6398
Quinclorac (75 DF)	0.38	PRE	96	95	94	100	96	96	95	95	100	96	15	3	3	6992
Quinclorac (1.5 GR)	0.25	DPRE	94	90	90	100	94	95	93	93	100	94	5	0	0	7089
Quinclorac (1.5 GR)	0.38	DPRE	95	93	93	99	94	95	93	93	99	93	13	1	1	6476
Quinclorac (1.5 GR)	0.5	DPRE	95	93	93	100	98	95	95	95	100	98	18	3	4	6416
Quinclorac (75 DF)	0.38	DPRE	96	95	94	100	99	96	95	94	100	96	8	0	0	7104
Quinclorac (1.5 GR)	0.25	EPOST	58	80	76	100	94	58	85	81	100	91	4	0	0	6951
Quinclorac (1.5 GR)	0.38	EPOST	79	93	90	100	95	81	94	90	100	96	9	0	0	6429
Quinclorac (1.5 GR)	0.5	EPOST	65	94	93	100	98	70	94	93	100	98	5	0	0	7040
Quinclorac (75 DF)	0.38															
+ Agri-Dex (1%)		EPOST	91	95	95	100	99	93	95	95	100	98	8	0	0	7019
Block 2																
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	5107
Quinclorac (75 DF)	0.38															
+ pendimethalin																
(60 DF)	1.0	DPRE	96	95	95	100	95	96	95	95	100	95	16	0	0	6254

continued

Table 12. Continued.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/23	6/18	7/1	7/29	Weed control: Barnyardgrass (ECHCG) 6/4	6/23	6/18	7/1	7/29	Rice injury 6/4	6/18	6/23	Rice yield 8/10
	(lb/A)		– – – – – – – – – – – – – – – – – – – –					(%)					– – – – – – – – – – – – – – – – – – – –			(lb/A)
Block 2. Continued.																
Quinclorac (75 DF) + pendimethalin (60 DF)	0.5 + 1.0	EPOST	95	95	95	100	99	95	95	95	100	100	11	0	0	6156
Quinclorac (75 DF) + pendimethalin (60 DF)	0.5 + 1.0	LPOST	0	86	74	100	99	0	89	76	100	96	10	0	0	6532
Quinclorac (75 DF) + pendimethalin (3.3 EC)	0.38 + 1.0	DPRE	95	95	95	100	95	95	95	95	100	98	14	0	0	6704
Quinclorac (75 DF) + pendimethalin (3.3 EC) + Agri-Dex (1%)	0.5 + 1.0	EPOST	95	95	95	100	98	95	95	95	100	95	13	0	0	5968
Quinclorac (75 DF) + pendimethalin (3.3 EC) + Agri-Dex (1%)	0.5 + 1.0	LPOST	0	94	78	100	98	0	95	80	100	98	0	0	0	6605
LSD (0.05)			4	5	8	1	5	4	4	7	1	5	4	NS	NS	938

Table 12. Continued.

Herbicide	Rate	Application timing	Weed control: Resistant barnyardgrass (R-ECHCG) 6/4	6/23	6/18	7/1	7/29	Weed control: Barnyardgrass (ECHCG) 6/4	6/23	6/18	7/1	7/29	Rice injury 6/4	6/18	6/23	Rice yield 8/10
	(lb/A)		– – – – – – – – – – – – – – – – – – – –					(%)					– – – – – – – – – – – – – – – – – – – –			(lb/A)
Block 2. Continued.																
Quinclorac (75 DF) + pendimethalin (60 DF)	0.5 + 1.0	EPOST	95	95	95	100	99	95	95	95	100	100	11	0	0	6156
Quinclorac (75 DF) + pendimethalin (60 DF)	0.5 + 1.0	LPOST	0	86	74	100	99	0	89	76	100	96	10	0	0	6532
Quinclorac (75 DF) + pendimethalin (3.3 EC)	0.38 + 1.0	DPRE	95	95	95	100	95	95	95	95	100	98	14	0	0	6704
Quinclorac (75 DF) + pendimethalin (3.3 EC) + Agri-Dex (1%)	0.5 + 1.0	EPOST	95	95	95	100	98	95	95	95	100	95	13	0	0	5968
Quinclorac (75 DF) + pendimethalin (3.3 EC) + Agri-Dex (1%)	0.5 + 1.0	LPOST	0	94	78	100	98	0	95	80	100	98	0	0	0	6605
LSD (0.05)			4	5	8	1	5	4	4	7	1	5	4	NS	NS	938

Table 13. Susceptibility of red rice biotypes to imazethapyr (Pursuit) in field studies, Stuttgart.

TEST INFORMATION

Location	Stuttgart
Experimental Design / replications	Split Plot / 3
Plot size	4.5 by 2 ft.
Number of rows per plot	1
Soil type	Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH	1.3 / 5.5
Planting date	May 19, 1997
Harvest date	September 17-19, 1997 and October 2, 1997
Crop/Variety	red rice and Kaybonnet rice
Date of Flood	July 9, 1997

Comments: Plots not treated with imazethapyr (designated "untreated" in Table) were treated June 20 with propanil, 0.5 lb ai/A + bentazon, 0.75 lb ai/A. Imazethapyr (Pursuit) was applied at 0.0625 lb ai/A (1X) and 0.125 lb/A (2X). POST = postemergence.

Application type	POST (Pursuit)	POST (no Pursuit)
Date applied	6/10/97	6/20/97
Time	N/A	N/A
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	N/A	N/A
Relative humidity (%)	N/A	N/A
Wind (mph, direction)	5 / north	10 / southwest
Weather	cloudy	cloudy
Soil moisture	very wet	wet
Crop stage/Height (in.)	3-4 lf / 5-7"	
Sprayer type/mph	CO_2 Backpack	CO_2 Backpack
Nozzle type/Size	Flat fan / 8001	Flat fan / 8001
Boom ht / # Noz / Spacing (in.)	20 / 3 / 20	20 / 11 / 20
Gpa / Psi	10 / 23	10 / 25
Weed species		
ORYSA	3-4 lf / 6-9"	

Conclusions: Broad differences in growth and development patterns and minor differences in herbicide susceptibility were found among the 52 red rice biotypes. Imazethapyr provided nearly 100% control of most biotypes of red rice at 0.125 lb/A and more than 95% control at 0.063 lb/A. The blackhull biotypes 1995-8 and 1995-10 were marginally, but significantly, more tolerant than all other biotypes to 0.063 lb/A imazethapyr, producing 15 and 6%, respectively, of the biomass produced by untreated plants. These plants did not produce seed and were too small to be competitive. Fourteen other biotypes also survived and regrew from the injury at the lower herbicide rate to produce a small amount of biomass. In all, 44% of all blackhulls and 25% of all strawhulls had some survival, suggesting that the blackhull types as a group may be somewhat more tolerant to imazethapyr.

Table 13.

Biotype	Red rice control 7/18/97		Final plant height 9/15/97			Total plant biomass		
	1X Pursuit	2X Pursuit	Untreated	1X Pursuit	2X Pursuit	Untreated	1X Pursuit	2X Pursuit
	– – – – (%) – – – –		(cm)	– – – – (% UTC) – – – –		(kg/m of row)	– – (% UTC) – –	
Blackhull types								
StgB	97	99	152	0	0	1.68	0	0
10A	100	100	154	0	0	1.46	0	0
17C	100	100	136	0	0	1.05	0	0
18E	99	100	144	36	0	1.00	1	0
1995-1	98	100	130	44	0	0.86	1	0
1995-10	88	100	181	64	0	1.33	6	0
1995-13	100	100	96	0	0	0.98	0	0
1995-4	100	100	129	0	0	0.51	0	0
1995-8	90	100	134	49	0	0.95	15	0
1995-9	95	98	170	0	0	1.34	0	0
1996-11	98	100	150	42	0	1.24	2	0
1997-1	98	100	120	0	0	0.97	0	0
1997-27	97	100	151	47	0	1.37	2	0
19A	100	100	162	0	0	1.32	0	0
8	100	100	147	0	0	1.30	0	0
TX4	97	100	158	38	0	1.36	2	0
Strawhull types								
StgS	99	100	147	64	0	1.24	1	0
11A	100	100	155	0	0	1.07	0	0
11B	100	100	147	0	0	1.23	0	0
11C	100	100	147	0	0	0.37	0	0
11D	100	99	151	0	0	1.08	0	0
13G	100	100	142	0	0	1.33	0	0
13H	100	99	98	0	0	0.65	0	0
15A	100	99	137	0	0	1.25	0	0
16B	100	100	148	0	0	1.43	0	0

continued

Table 13. Continued.

Biotype	Red rice control 7/18/97		Final plant height 9/15/97			Total plant biomass		
	1X Pursuit	2X Pursuit	Untreated	1X Pursuit	2X Pursuit	Untreated	1X Pursuit	2X Pursuit
	– – – – (%) – – – –		(cm)	– – – – – (% UTC) – – – –		(kg/m of row)	– –(% UTC) – – –	
16E	96	100	153	40	0	1.38	2	0
17A	99	100	140	0	0	1.39	0	0
1995-11	100	100	138	0	0	1.07	0	0
1995-12	99	100	150	0	0	1.48	0	0
1995-15	99	100	162	0	0	1.28	0	0
1995-2	100	100	131	0	0	0.83	0	0
1995-3	100	100	149	0	0	1.59	0	0
1995-5	100	100	140	0	0	1.15	0	0
1995-6	100	100	141	0	0	1.25	0	0
1995-7	97	100	144	0	0	1.09	0	0
Katy-RR hybrid	100	100	118	0	0	0.98	0	0
1996-10	100	100	146	0	0	1.24	0	0
1997-3	100	100	139	0	0	1.25	0	0
1997-22	100	100	153	0	0	1.21	0	0
1997-23	100	100	153	0	0	1.46	0	0
1997-24	98	100	150	0	0	1.29	0	0
1997-25	100	100	147	0	0	1.33	0	0
1997-26	100	100	149	0	0	1.18	0	0
1997-28	99	100	146	0	0	1.29	0	0
20A	98	100	155	0	0	1.25	0	0
21A	100	100	138	0	0	1.24	0	0
2B	95	100	149	39	0	1.31	1	0
3B	100	100	152	0	0	0.96	0	0
4A	93	100	145	42	0	1.15	3	0
7	97	100	155	55	0	1.11	3	0
LA3	98	100	148	42	0	1.31	3	0
MS4	100	100	140	39	0	1.07	1	0
White types								
Kaybonnet	100	99	109	0	0	0.74	0	0
PI 414714	100	100	121	0	0	0.81	0	0
LSD (0.05)	– – – 4 – – –		15	51	NS	0.30	4	NS

Table 14. Influence of flooding on the performance of herbicides and growth of rice and red rice, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... Split Plot / 4
Plot size ..... 6.6 by 9.9 ft.
Number of rows per plot ..... broadcast
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date
Red rice ..... June 3, 1997
Domestic rice ..... June 6, 1997
Harvest date ..... October 31, 1997
Crop/Variety ..... Red Rice and Kaybonnet rice
Date of Flood ..... June 5, 1997
Date of draining pinpoint flood ..... June 15, 1997

Comments: Plots were tilled with Triple-K before planting. Red rice seeds were broadcast seeded at 24 lb/A. Domestic rice seeds were soaked for 24 h and drained for 24 h before broadcast-seeding. Domestic rice yield was adjusted to 12% moisture content. PPI = preplant incorporated; PPL = preplant (prior to flood and rice planting); DAS = days after sowing.

Application type	PPI	PPL
Date applied	6/3/97	6/4/97
Time	3:00 pm	8:30 am
Incorporation equipment	Rototiller	N/A
Air/Soil temperature (F)	N/A	N/A
Relative humidity (%)	N/A	N/A
Wind (mph, direction)	5 / north	5 / north
Weather	mostly sunny	cloudy
Soil moisture	dry	dry
Crop stage/Height (in.)		
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Flat fan / 8001	Flat fan / 8001
Boom ht / # Noz / Spacing (in.)	20 / 3 / 28	20 / 3 / 28
Gpa / Psi	10 / 25	10 / 25

Conclusions: This study evaluated the influence of flooding on the activity of molinate (Ordram) and thiobencarb (Bolero) on domestic rice and red rice. Thiobencarb was more active on red rice under continuous flooding than pinpoint flooding but also caused greater injury on domestic rice. The rice injury from thiobencarb reduced panicle density and yield of domestic rice. Flooding did not affect control of red rice biotypes with these herbicides. Molinate was effective against red rice regardless of flooding method, and yields were high. Continuous flooding without herbicides was also an effective treatment for red rice.

Table 14.

Treatment	Red rice biotype overseeded	Injury rating 80 DAS	Control rating 83 DAS	Panicle density		Domestic rice yield
		Domestic rice	Red rice	Domestic rice	Red rice	
(lb/A)		(%)		(no/ft^2)		(lb/A)
Continuous flood:						
Molinate, 4.0, PPI	None	0		38		4650
Molinate 4.0, PPI	Strawhull	0	87	38	<1	4680
Molinate 4.0, PPI	Blackhull	0	90	38	<1	5120
Thiobencarb, 4.0, PPL	None	75		27		1170
Thiobencarb, 4.0, PPL	Strawhull	80	92	24	<1	1070
Thiobencarb, 4.0, PPL	Blackhull	75	85	30	<1	1700
Untreated	None	0		31		4250
Untreated	Strawhull	0	90	38	<1	4630
Untreated	Blackhull	0	85	39	1	4440
Pinpoint flood:						
Molinate, 4.0, PPI	None	2	38			4730
Molinate 4.0, PPI	Strawhull	2	90	40	<1	5170
Molinate 4.0, PPI	Blackhull	2	85	42	<1	4980
Thiobencarb, 4.0, PPL	None	15	45			5040
Thiobencarb, 4.0, PPL	Strawhull	2	35	30	4	3540
Thiobencarb, 4.0, PPL	Blackhull	7	7	39	2	4160
Untreated	None	0	41			5250
Untreated	Strawhull	0	0	32	6	2980
Untreated	Blackhull	0	0	35	8	3040
LSD (0.05)		12	23	9	4	1140

Table 15. Effect of soybean herbicides on strawhull and blackhull red rice biotypes in field studies, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... Split Plot / 3
Plot size ..... 5.3 by 10 ft.
Row width / Number of rows per plot ..... 7 / 8
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... June 23, 1997
Harvest date ..... September 12, 1997
Crop/Variety ..... red rice only
Date of Flood ..... no flood
Flush irrigated ..... July 22, August 1 and August 12, 1997

Comments: PPI = preplant incorporated; POST = postemergence.

Application type	PPI	POST
Date applied	6/23/97	7/7/97
Time	12:00 noon	N/A
Incorporation equipment	Rototiller	N/A
Air temperature (F)	90	90
Relative humidity (%)	N/A	N/A
Wind (mph, direction)	5 / south-southwest	5 / southwest
Weather	mostly cloudy	partly cloudy
Soil moisture	dry	dry
Crop stage / Height (in.)	N/A	N/A
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Flat fan / 8001	Flat fan / 8001
Boom ht / # Noz / Spacing (in.)	20 / 3 / 20	20 / 3 / 20
Gpa / Psi	10 / 23	10 / 23
Weed species:	– – – – – – – – (height / # leaves)	– – – – – – – –
ORSYA - strawhull RR		3 lf / 6-7"
ORYSA - blackhull RR		3 lf / 8"
ORYSA - purple marker		3 lf / 4-5"

Conclusions: All PPI treatments (metolachlor, dimethenamid and alachlor + trifluralin) gave 100% control of both strawhull and blackhull red rice biotypes. At the 3-lf stage, glufosinate provided more than 95% control and all other treatments provided less than 70% control. Control from standard rates of postemergence graminicides (clethodim, sethoxydim, quizalofop and fluazifop + fenoxaprop) ranged from 33% for sethoxydim (0.3 lb ai/A) on blackhull red rice to 60% for quizalofop (0.056 lb ai/A) on strawhull red rice. Imazethapyr (Pursuit) provided less than 50% control. Overall, postemergence herbicides were moderately more active against strawhull than blackhull red rice. Control by postemergence treatments may have been reduced generally because soybean plants were not present in these plots to compete with the red rice.

Table 15.

Herbicide	Rate	Application timing	Red rice type	Visual control
	(lb ai/A)		(Stuttgart)	(%)
Metolachlor (Dual)	1.5	PPI	Blackhull	100
Metolachlor (Dual)	1.5	PPI	Strawhull	100
SAN582 (Frontier)	0.87	PPI	Blackhull	100
SAN582 (Frontier)	0.87	PPI	Strawhull	100
Alachlor : trifluralin (8:1) (Freedom)	3.38	PPI	Blackhull	100
Alachlor : trifluralin (8:1) (Freedom)	3.38	PPI	Strawhull	100
Imazethapyr	0.063	POST	Blackhull	35
Imazethapyr	0.063	POST	Strawhull	42
Imazethapyr	0.125	POST	Blackhull	30
Imazethapyr	0.125	POST	Strawhull	40
Clethodim	0.063	POST	Blackhull	17
Clethodim	0.063	POST	Strawhull	23
Clethodim	0.125	POST	Blackhull	47
Clethodim	0.125	POST	Strawhull	53
Sethoxydim	0.3	POST	Blackhull	33
Sethoxydim	0.3	POST	Strawhull	42
Sethoxydim	0.15	POST	Blackhull	30
Sethoxydim	0.15	POST	Strawhull	37
Quizalofop	0.031	POST	Blackhull	33
Quizalofop	0.031	POST	Strawhull	42
Quizalofop	0.056	POST	Blackhull	58
Quizalofop	0.056	POST	Strawhull	60
Fluazifop + fenoxaprop (Fusion)	0.188	POST	Blackhull	40

continued

Table 15. Continued.

Herbicide	Rate	Application timing	Red rice type	Visual control
	(lb ai/A)			(%)
Fluazifop + fenoxaprop (Fusion)	0.188	POST	Strawhull	42
Fluazifop + fenoxaprop (Fusion)	0.094	POST	Blackhull	42
Fluazifop + fenoxaprop (Fusion)	0.094	POST	Strawhull	45
Glyphosate	0.5	POST	Blackhull	63
Glyphosate	0.5	POST	Strawhull	67
Glufosinate	0.5	POST	Blackhull	96
Glufosinate	0.5	POST	Strawhull	95
			Blackhull LSD (0.05)	15
			Strawhull LSD (0.05)	15

Table 16. Susceptibility of red rice biotypes and glufosinate (Liberty)-resistant rice to postemergence applications of glufosinate in field studies, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... Split Plot / 4
Plot size ..... 5.25 by 7.5 ft.
Row width / Number of rows per plot ..... 7"/9
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.3 / 5.5

Planting date ..... June 4, 1997
Harvest date (dry weight) ..... August 26 - September 2, 1997
Crop/Variety ..... Liberty-resistant Gulfmont
Date of Flood ..... July 10, 1997

Comments: BF = preflood, POFL = postflood; LPOFL = late postflood.

Application type	3-lf	BF	POFL	LPOFL
Date applied	6/26/97	7/7/97	7/14/97	7/21/97
Time	2:00 pm	N/A	N/A	9:30 am
Incorporation equipment	N/A	N/A	N/A	N/A
Air temperature (F)	95	80	85	N/A
Relative humidity (%)	N/A	N/A	N/A	N/A
Wind (mph, direction)	5 / south southwest	10 / east	5 / southwest	light / variable
Weather	mostly sunny	partly cloudy	sunny	mostly sunny
Soil moisture	dry	dry	flood 1"	flood 2"
Crop stage / Height (in.)	3-4 lf / 6"	tillering / 10"	tillering / 12-14"	tillering / 16-18"
Sprayer type / mph	BkPkCO$_2$ / 2	BkPkCO$_2$ / 2	BkPkCO$_2$ / 2	BkPkCO$_2$ / 2
Nozzle type / Size	Flat fan / 8001	Flat fan / 8001	Flat fan / 8001	Flat fan / 8001
Boom ht / # Noz / Spacing (in.)	20 / 3 / 28	20 / 3 / 20	20 / 3 / 20	20 / 3 / 20
Gpa / Psi	10 / 23	10 / 10 / 23	10 / 23	10 / 23
Weed species:				
ORYSA	3-4 lf / 7-8"	tillering / 12"	tillering / 12-16"	tillering / 16-24"

Conclusions: The most efficacious control of several red rice biotypes in glufosinate-resistant 'Gulfmont' rice was from split applications of glufosinate at the three-leaf stage and preflood stage, or single preflood applications (Figures 1A, 1B). These treatments generally gave good control of Stuttgart strawhull (StgS) red rice at total rates of 0.75 to 1.0 lb/A. Single postflood applications of glufosinate at 0.5 lb/A or greater gave excellent control of StgS, but should not be recommended because early season weed competition can result in yield loss. TX4 red rice (Figure 1A) was about twice as tolerant as StgS (Figure 1B) to glufosinate.

Photosynthesis of red rice biotypes decreased rapidly beginning within the first five hours after treatment (HAT; Figure 2A). Transpiration decreased to a lesser degree than did photosynthesis (Figure 2B). Leaf chlorosis (as estimated by a Minolta SPAD-502) developed more slowly, becoming noticeable within 24 HAT (Figure 2C). Glufosinate did not cause chlorosis or any other visible changes in the Gulfmont plants even though photosynthesis and transpiration rates were reduced initially and then recovered (Figures 2A and 2B).

This research demonstrates that glufosinate can effectively control several red rice biotypes with a higher degree of selectivity in glufosinate-resistant rice. Because some biotypes of red rice appear to survive better than others at low rates of glufosinate, growers will need to avoid applying glufosinate at substantially reduced rates.

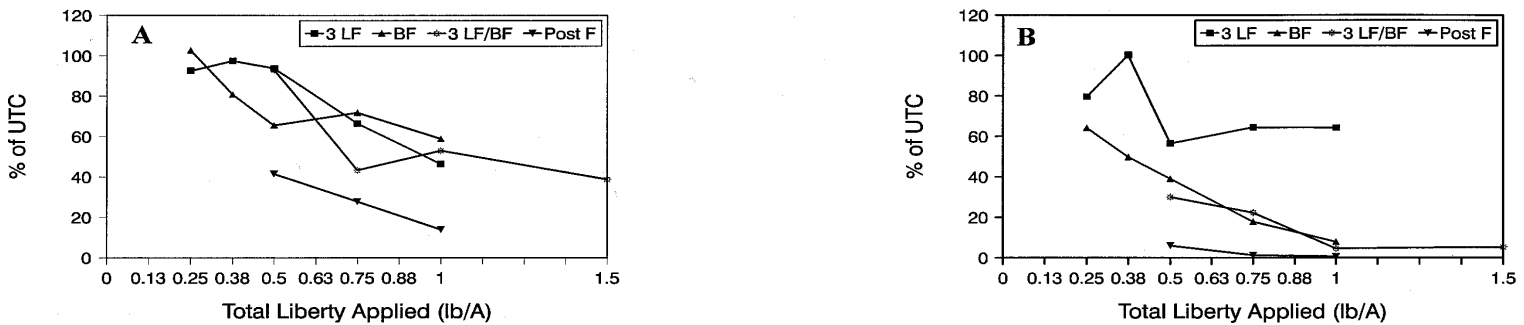

Figure 1. Effect of total rate and timing of glufosinate (Liberty) application on dry weight of TX4 red rice (A) and StgS red rice (B) in separate drill rows. Abbreviations for application timing: 3 lf = 3-leaf; BF = before flood (preflood); 3 lf/BF = 3-leaf followed by before flood; Post F = 4 days post-flood.

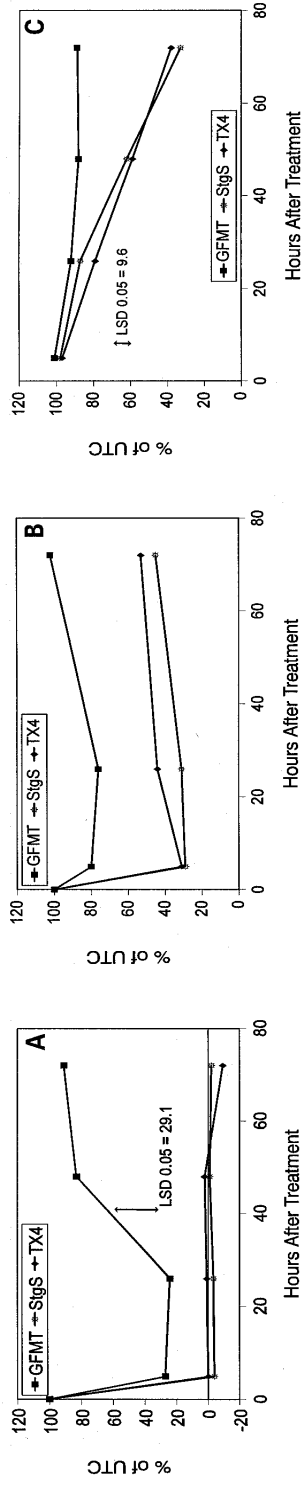

Figure 2. Effect of 1 lb/A glufosinate (Liberty) applied ten days post-flood on photosynthesis (A), transpiration (B), and relative chlorophyll content (C) of StgS and TX4 red rice biotypes, and glufosinate-resistant Gulfmont.

Table 17. Red rice control in IMI-tolerant rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Clay (9% sand, 38% silt, 53% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... June 6, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / IMI-Tolerant
Date of Flood ..... June 25, 1997

Comments: PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence; and EPOST = early postemergence.

Application type	PPI	PRE	DPRE	EPOST
Date applied	June 6, 1997	June 6, 1997	June 15, 1997	June 23, 1997
Time	12:00 pm	2:45 pm	1:00 pm	9:50 pm
Incorporation equipment	roto-tiller	N/A	N/A	N/A
Air / Soil temperature (F)	82 / 78	85 / 80	87 / 78	89 / 78
Relative humidity (%)	61	55	64	72
Wind (mph)	5-10	5-10	3-5	1-3
Weather	sunny	sunny	sunny	sunny
Soil moisture	moist	moist	moist	moist
Crop stage / Height	N/A	N/A	N/A	2-3 lf / 3"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	15 / 4 / 17	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 18	15 / 18	15 / 18	15 / 18
Weed species (population)	– – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – –			
ORYSA (150-180 / m^2)	N/A	N/A	N/A	2-3 lf / 2-3"

Conclusions: This study was designed to evaluate imazethapyr (Pursuit) for red rice control in IMI-rice. A soil application of imazethapyr at 0.063 followed by an early postemergence application of imazethapyr at 0.063 lb/A controlled red rice from 94 to 97%. This study was not taken to yield.

Table 17.

Herbicide	Rate	Application timing	Red rice (ORYSA) control 7/9	7/29	8/14	8/28	Rice injury 7/9	7/29	8/14	8/28	Rice heading 8/14	8/28
	(lb/A)		– – – – – – – – – – – – – – – – – –				(%) – – – – – – – – – – – – – – – – – –					
Untreated check			0	0	0	0	0	0	0	0	95	100
Imazethapyr	0.094	PPI	66	56	61	55	0	0	0	0	86	96
Imazethapyr	0.125	PPI	89	89	92	92	0	0	0	0	93	97
Imazethapyr	0.063	PRE	43	35	40	30	0	0	0	0	88	94
Imazethapyr	0.094	PRE	73	73	30	55	0	3	0	0	84	96
Imazethapyr	0.125	PRE	79	84	71	78	0	0	0	0	93	97
Imazethapyr +	0.063											
pendimethalin	1.0	DPRE	76	58	88	58	0	4	0	0	75	95
Imazethapyr +	0.094											
pendimethalin	1.0	DPRE	85	74	87	70	3	8	0	0	79	95
Imazethapyr +	0.125											
pendimethalin	1.0	DPRE	89	94	97	85	4	3	0	0	84	97
Imazethapyr +	0.063											
AG-98 (0.25%)		EPOST	71	88	93	91	0	3	0	0	80	97
Imazethapyr +	0.094											
AG-98 (0.25%)		EPOST	78	95	90	95	3	5	0	0	73	95
Imazethapyr +	0.125											
AG-98 (0.25%)		EPOST	70	95	95	93	0	3	0	0	81	98
Imazethapyr fb	0.063	PPI										
imazethapyr +	0.063											
AG-98 (0.25%)		EPOST	89	94	98	97	0	0	0	0	92	98
Imazethapyr fb	0.063	PRE										
imazethapyr +	0.063											
AG-98 (0.25%)		EPOST	83	93	97	97	0	0	0	0	90	98
Imazethapyr +	0.063											
pendimethalin fb	1.0	DPRE										
imazethapyr +	0.063											
AG-98 (0.25%)		EPOST	86	94	98	94	3	3	0	0	71	98
Propanil (Stam M4) +	4.0											
pendimethalin	1.0	EPOST	24	25	38	29	0	0	0	0	88	91
Quinclorac +	0.5											
pendimethalin	1.0	DPRE	5	15	35	24	0	0	0	0	80	94

continued

Table 17. Continued.

Herbicide	Rate	Application timing	Red rice (ORYSA) control 7/9	7/29	8/14	8/28	Rice injury 7/9	7/29	8/14	8/28	Rice heading 8/14	8/28
	(lb/A)		– – – – – – – – – – – – – – – – – – – –				(%) –					
Clomazone fb imazethapyr	0.5 0.063	PRE EPOST	80	95	96	96	0	3	0	0	79	96
LSD (0.05)			9	10	12	11	NS	NS	NS	NS	14	4

Table 18. Evaluation of post-flood application timings of triclopyr (Grandstand) following fenoxaprop (Whip), Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (9% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 21, 1997
Harvest date ..... September 5, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 30, 1997

Comments: 0 DAT = day fenoxaprop was applied to specified treatments (June 26); 14 and 28 DAT = 14 and 28 days after fenoxaprop was applied. PI = panicle initiation (14 DAT); and DPRE = delayed preemergence.

Application type	DPRE	0 DAT	14 DAT	28 DAT
Date applied	May 6, 1997	June 26, 1997	July 11, 1997	July 24, 1997
Time	2:45 pm	9:00 pm	8:05 am	1:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	81 / 70	90 / 80	80 / 78	97 / 94
Relative humidity (%)	32	70	82	80
Wind (mph, direction)	5-10	0-3	0-3	0-3
Weather	sunny	partly cloudy	partly cloudy	sunny
Soil moisture	good	wet	wet	dry
Crop stage/Height	N/A	3-5 lf / 12-16"	PI / 12-16"	1" internode / 14-18"
Sprayer type/mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type/Size	FF / 11002	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17	18 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 20	15 / 18	15 / 18	15 / 18
Weed species (population)	– – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – –			
ORYSA (150-180/m^2)	N/A	N/A	N/A	2-3 lf / 2-3"

Conclusions: This study was designed to evaluate rice injury when triclopyr (Grandstand) followed an application of fenoxaprop (Whip). Rice injury was 11% at the August 28 rating date, but was not significantly higher than injury from single applications of triclopyr. Fenoxaprop at 0.08 lb/A followed by triclopyr at 0.25 lb/A plus propanil at 1.0 lb/A had the highest numerical yield of 7436 lb/A, and fenoxaprop at 0.07 lb/A followed by triclopyr at 0.38 lb/A had the lowest numerical yield of 3798 lb/A.

Table 18.

Herbicide	Rate	Application timing	Rice injury 7/9	7/29	8/14	8/28	Rice yield
	(lb/A)		– – – – – – – – – (%) – – – – – – – – –				(lb/A)
0 DAT = June 26 when fenoxaprop was applied:							
Untreated check			0	0	0	0	6098
Triclopyr +	0.25 +						
propanil (Stam M4)	1.0	0 DAT	4	3	0	0	6386
Triclopyr +	0.25 +						
propanil (Stam M4)	1.0	14 DAT		0	3	0	5642
Triclopyr +	0.25 +						
propanil (Stam M4)	1.0	28 DAT		4	4	1	5253
Triclopyr + AG-98 (0.25%)	0.38	0 DAT	5	11	11	3	5633
Triclopyr + AG-98 (0.25%)	0.38	14 DAT		0	0	3	5762
Triclopyr + AG-98 (0.25%)	0.38	28 DAT		3	3	0	4290
Fenoxaprop	0.07	0 DAT	11	16	11	5	5801
Fenoxaprop +	0.07 +						
triclopyr +	0.25 +						
propanil (Stam M4)	1.0	0 DAT	5	3	5	0	6012
Fenoxaprop fb	0.07 fb	0 DAT					
triclopyr +	0.25 +						
propanil (Stam M4)	1.0	14 DAT	10	5	8	3	6050
Fenoxaprop fb	0.07 fb	0 DAT					
triclopyr +	0.25 +						
propanil (Stam M4)	1.0	28 DAT	14	11	8	5	4970
Fenoxaprop +	0.07 +						
triclopyr +	0.38						
AG-98 (0.25%)		0 DAT	5	1	3	0	5973
Fenoxaprop fb	0.07 fb	0 DAT					
triclopyr + AG-98 (0.25%)	0.38	14 DAT	15	14	14	3	5719
Fenoxaprop fb	0.07 fb	0 DAT					
triclopyr +	0.38						
AG-98 (0.25%)		28 DAT	10	21	16	4	3798
Fenoxaprop	0.08	0 DAT	13	20	19	11	5661
Fenoxaprop +	0.08 +						
triclopyr +	0.25 +						
propanil (Stam M4)	1.0	0 DAT	6	14	10	5	5393

continued

Table 18. Continued.

Herbicide	Rate	Application timing	Rice injury 7/9	7/29	8/14	8/28	Rice yield
	(lb/A)		(%)				(lb/A)
Fenoxaprop fb triclopyr + propanil (Stam M4)	0.08 fb 0.25 + 1.0	0 DAT 14 DAT	11	14	9	5	7436
Fenoxaprop fb triclopyr + propanil (Stam M4)	0.08 fb 0.25 + 1.0	0 DAT 28 DAT	13	13	15	3	4571
Fenoxaprop + triclopyr + AG-98 (0.25%)	0.08 fb 0.38	0 DAT	11	13	6	5	5465
Fenoxaprop fb triclopyr + AG-98 (0.25%)	0.08 fb 0.38	0 DAT 14 DAT	14	16	15	5	5301
Fenoxaprop fb triclopyr + AG-98 (0.25%)	0.08 fb 0.38	0 DAT 28 DAT	13	18	11	6	5941
Fenoxaprop fb triclopyr + (propanil + molinate)	0.08 0.25 + 1.0	0 DAT 28 DAT	5	5	4	3	5445
LSD (0.05)			5	7	10	NS	981

Table 19. Evaluation of triclopyr (Grandstand) and bensulfuron (Londax) for rice weed control, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (9% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: Application based on rice leaf stage; PI - panicle initiation.

Application type	2-3 lf	3-5 lf	PI
Date applied	June 5, 1997	June 23, 1997	July 11, 1997
Time	10:30 am	7:30 am	7:30 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	72 / 70	78 / 78	80 / 78
Relative humidity (%)	70	90	82
Wind (mph, direction)	2-5	1-2	0-3
Weather	sunny	sunny	partly cloudy
Soil moisture	dry	good	wet
Crop stage / Height	2-3 lf / 2-5"	4-5 lf / 4-6"	PI / 12-16"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 22	15 / 18	15 / 18
Weed species (population)	– – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – –
SEBEX (15-20 / m^2)	1-3 lf / 1-3"	1-4 lf / 1-4"	6-12 lf / 6-24"
ECHCG (500-600 / m^2)	1-3 lf / 0.5-3"	2-5 lf/ 0.5-6"	1-4 till / 10-24"

Conclusions: This study evaluated triclopyr (Grandstand) and bensulfuron (Londax) for weed control in rice. Barnyardgrass control was above 90% for all treatments at the first rating. However, control dropped significantly as the season progressed. Control of hemp sesbania and palmleaf morningglory was 94% or greater for all treatments at the early rating. The rice did not yield due to heavy late-season barnyardgrass pressure.

Table 19.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	8/14	Hemp sesbania SEBEX 6/13	Palmleaf morning-glory IPOWR 6/13	Rice injury 6/13	7/9	7/30	8/14
	(lb/A)		(%)									
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + AG-98 (0.25%)	4.0 fb 0.25	2-3 lf fb 3-5 lf	93	71	66	48	97	95	1	0	0	0
Triclopyr + propanil (Stam EDF) + AG-98 (0.25%)	0.19 + 4.0	2-3 lf	94	68	36	55	97	98	6	0	0	0
Triclopyr + (propanil + molinate)	0.19 + 4.0	2-3 lf	97	84	75	80	98	98	9	0	0	0
Triclopyr + propanil (Stam EDF) + AG-98 (0.25%)	0.25 + 4.0	3-5 lf		44	39	44				0	0	0
Triclopyr + propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + propanil	0.19 + 4.0 fb 0.25	2-3 lf fb PI	95	69	70	79	98	98	8	0	0	0
Triclopyr + propranil (Stam EDF) + AG-98 (0.25%) fb triclopyr + propanil	0.25 + 4.0 fb 0.25	3-5 lf fb PI		35	45	54				0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + AG-98 (0.25%)	4.0 fb 0.25	2-3 lf fb PI	93	35	39	43	98	98	8	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + AG-98 (0.25%)	4.0 fb 0.38	2-3 lf fb PI	93	25	46	39	97	97	9	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + propanil (Stam EDF) + AG-98 (0.25%)	4.0 fb 0.25 + 1.0	2-3 lf fb PI	95	40	49	55	98	98	6	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + propanil (Stam EDF) + AG-98 (0.25%)	4.0 fb 0.38 + 1.0	2-3 lf fb PI	95	50	49	49	98	98	8	0	0	0

continued

Table 19. Continued

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	8/14	Hemp sesbania SEBEX 6/13	Palmleaf morning-glory IPOWR 6/13	Rice injury 6/13	7/9	7/30	8/14
	(lb/A)		(%)									
Propanil (Stam EDF) + AG-98 (0.25%) fb triclopyr + (propanil + molinate)	4.0 0.25 1.0	2-3 lf PI	93	61	68	53	98	98	8	0	0	0
Bensulfuron + propanil (Stam EDF) + AG-98 (0.25%) fb bensulfuron + propanil (Stam EDF) + AG-98 (0.25%)	0.019 4.0 0.019 4.0	2-3 lf 3-5 lf	93	88	80	79	97	98	9	0	0	0
Bensulfuron + propanil (Stam EDF) + AG-98 (0.25%) fb bensulfuron + propanil (Stam EDF) + AG-98 (0.25%)	0.019 4.0 0.028 4.0	2-3 lf 3-5 lf	93	86	80	78	97	98	8	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb bensulfuron + propanil (Stam EDF) + AG-98 (0.25%)	4.0 0.038 4.0	2-3 lf 3-5 lf	89	81	71	65	96	94	6	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb bensulfuron + propanil (Stam EDF) + AG-98 (0.25%)	4.0 0.047 1.0	2-3 lf PI	91	55	31	45	98	98	4	0	0	0
Bensulfuron + (propanil + molinate)	0.019 4.0	2-3 lf	97	83	63	71	96	98	6	0	0	0
Propanil (Stam EDF) + AG-98 (0.25%) fb bensulfuron + (propanil + molinate)	4.0 0.047 1.0	2-3 lf PI	91	39	38	44	98	98	9	0	0	0
LSD (0.05%)			NS	12	14	17	NS	NS	NS	NS	NS	NS

Table 20. Annual grass control in rice, Rohwer.

TEST INFORMATION

Location Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (89% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7
Planting date ..... May 14, 1997
Harvest date ..... October 7, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: Application based on rice leaf stage.

Application type	2-3 lf	4-5 lf
Date applied	June 5, 1997	June 23, 1997
Time	8:30 am	9:00 am
Incorporation equipment	N/A	N/A
Air / Soil temperature (F)	67 / 67	86 / 78
Relative humidity (%)	84	84
Wind (mph, direction)	2-5	1-2
Weather	sunny	sunny
Soil moisture	dry	good
Crop stage / Height	2-3 lf / 2-5"	5 lf / 10"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 22	15 / 18
Weed species (population)	– – – – – – – – (height / # leaves)	– – – – – – – –
SEBEX (15-20 / m^2)	2-3 lf / 2-5"	4-8 lf / 2-5"
ECHCG (500-600 / m^2)	1-3 lf / 0.5-3"	4-5 lf/ 0.5-3"
IPOWR (4-5 / m^2)	Cot.-2 lf / 2-5"	Cot.-6 lf / 2-5"

Conclusions: This study evaluated herbicides for annual grass control in rice. Barnyardgrass control was above 90% for all treatments at the June 13 rating. However, by August 14 barnyardgrass control was below 80% with most single herbicide applications.

Table 20.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	8/14	Hemp sesbania SEBEX 6/13	Palmleaf morning-glory IPOWR 6/13	Rice injury 6/13	7/9	7/30	8/14	Rice yield
	(lb/A)							(%)					(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	1008
Propanil (Stam M-4)	4.0	2-3 lf	95	56	44	46	97	96	8	0	0	0	1181
Propanil (Stam 80 EDF) + AG-98 (0.25%)	4.0	2-3 lf	90	34	26	30	97	94	5	0	0	0	586
Propanil (Super Wham)+ Agri-Dex (1%)	4.0	2-3 lf	94	43	33	33	97	97	18	0	0	0	1148
Propanil (Stam M-4) fb propanil (Stam M-4)	3.0 3.0	2-3 lf 4-5 lf	93	93	80	83	97	95	10	0	0	0	3457
Propanil (Stam 80EDF) + AG-98 (0.25%) fb propanil (Stam 80EDF) + AG-98 (0.25%)	3.0 3.0	2-3 lf 4-5 lf	93	88	69	84	97	97	4	0	0	0	3616
Propanil (Super Wham) + Agri-Dex (1%) fb propanil (Super Wham) + Agri-Dex (1%)	3.0 3.0	2-3 lf 4-5 lf	93	90	87	86	97	97	14	0	0	0	3803
Propanil (Stam M-4) + thiobencarb	3.0 3.0	2-3 lf	97	83	46	63	94	98	15	0	0	0	1873
Propanil (Super Wham) + thiobencarb + Agri-Dex (1%)	3.0 3.0	2-3 lf	97	74	50	56	95	98	19	0	0	0	1340
Propanil (Stam 80EDF) + thiobencarb + AG-98 (0.25%)	3.0 3.0	2-3 lf	97	73	54	53	97	98	10	0	0	0	2070
Propanil (Stam M-4) + pendimethalin	3.0 1.0	2-3 lf	97	90	79	76	97	97	14	0	0	0	3587
Propanil (Super Wham) + pendimethalin + Agri-Dex (1%)	3.0 1.0	2-3 lf	97	88	75	73	97	98	20	0	0	0	3491

continued

Table 20. Continued.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	8/14	Hemp sesbania SEBEX 6/13	Palmleaf morning-glory IPOWR 6/13	Rice injury 6/13	7/9	7/30	8/14	Rice yield
	(lb/A)							(%)					(lb/A)
Propanil (Stam 80EDF) + pendimethalin + AG-98 (0.25%)	3.0 + 1.0	2-3 lf	97	84	74	81	97	97	6	0	0	0	2555
Propanil (Stam 80EDF) + quinclorac + AG-98 (0.25%)	3.0 + 0.125	2-3 lf	96	69	55	60	97	97	13	0	0	0	2315
Propanil (Stam M-4) + quinclorac	3.0 + 0.125	2-3 lf	97	93	84	90	95	98	13	0	0	0	3890
Propanil (Stam M-4) + quinclorac	3.0 + 0.25	2-3 lf	97	90	93	95	97	97	10	0	0	0	4835
Propanil (Stam M-4) + quinclorac	3.0 + 0.38	2-3 lf	98	90	98	96	98	98	10	0	0	0	4494
Propanil (Super Wham) + quinclorac + Agri-Dex (1%)	3.0 + 0.125	2-3 lf	97	88	84	84	97	97	10	0	0	0	4120
Quinclorac + Agri-Dex (1%)	0.125	2-3 lf	91	83	71	70	97	92	4	0	0	0	2180
Quinclorac + Agri-Dex (1%)	0.25	2-3 lf	88	83	78	73	96	92	4	0	0	0	2891
Quinclorac + Agri-Dex (1%)	0.38	2-3 lf	91	93	90	89	98	97	14	0	0	0	5076
(Propanil + molinate)	6.0	2-3 lf	95	86	80	81	98	97	23	0	0	0	3477
LSD (0.05)			4	12	16	16	3	4	9	NS	NS	NS	1686

Table 21. Pendimethalin (Prowl) combinations for weed control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: DPRE = delayed preemergence; EPOST = early postemergence; LPOST = late postemergence.

Application type	DPRE	EPOST	LPOST
Date applied	May 22, 1997	June 5, 1997	June 23, 1997
Time	9:00 am	7:05 am	9:35 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	67 / 65	68 / 67	87 / 78
Relative humidity (%)	59	72	80
Wind (mph, direction)	4-6	2-4	1-3
Weather	sunny	sunny	sunny
Soil moisture	good	dry	good
Crop stage / Height	N/A	2-3 lf / 2-5"	5 lf / 10"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	18 / 4 / 17	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 18	15 / 22	15 / 18
Weed species (population)	– – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – –
SEBEX (20-25 / m^2)	N/A	1-3 lf / 2-4"	4-8 lf / 4-6"
ECHCG (25-30 / m^2)	N/A	1-3 lf / 0.5-2"	4-5 lf / 4-6"

Conclusions: This study evaluated several soil-applied products for barnyardgrass control. All treatments controlled barnyardgrass 87 to 98% at the June 13 rating. Pendimethalin (Prowl) at 1.0 lb / A plus quinclorac (Facet) at 0.25 to 0.5 lb / A had the most consistent control. Rice yields did not differ among treatments.

Table 21.

			Weed control										
			Barnyardgrass (ECHCG)			Hemp sesbania SEBEX		Palmleaf morning-glory IPOWR	Rice injury				Rice
Herbicide	Rate	Application timing	6/13	7/9	7/29	6/13	7/9	6/13	6/2	6/13	7/9	7/29	yield
	(lb/A)							(%)					(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	4293
Pendimethalin	1.0	DPRE	94	93	74	80	73	76	3	5	0	0	4350
Pendimethalin + thiobencarb	1.0 2.0	DPRE	94	95	76	84	70	82	4	8	0	0	5042
Pendimethalin + thiobencarb	1.0 3.0	DPRE	94	95	71	86	69	78	5	6	0	0	4720
Pendimethalin + quinclorac (75 DF)	1.0 0.25	DPRE	97	93	90	88	90	90	8	8	0	0	4763
Pendimethalin + quinclorac (75 DF)	1.0 0.375	DPRE	97	91	95	97	93	97	4	6	0	0	5152
Quinclorac (75 DF)	0.25	DPRE	96	93	95	93	83	96	3	5	0	0	5344
Quinclorac (75 DF)	0.375	DPRE	94	94	88	91	81	87	4	4	0	0	5258
Quinclorac (75 DF)	0.5	DPRE	98	94	94	97	93	97	5	6	0	0	5191
Quinclorac (1.5 G)	0.25	DPRE	97	94	88	86	69	95	6	4	0	0	5239
Quinclorac (1.5 G)	0.375	DPRE	95	94	83	93	73	95	4	5	0	0	4936
Quinclorac (1.5 G)	0.5	DPRE	98	94	90	94	84	97	5	8	0	0	5296
Clomazone	0.5	DPRE	96	94	79	64	34	91	8	6	0	0	4576
Clomazone	0.75	DPRE	93	94	88	58	51	90	6	4	0	0	4941
Thiobencarb	4.0	DPRE	92	91	53	80	55	89	1	4	0	0	4523
Quinclorac (75 DF) + pendimethalin	0.375 1.0	DPRE	87	89	86	85	83	61	3	4	0	0	4283
Quinclorac (75 DF) + pendimethalin	0.5 1.0	EPOST	98	94	97	95	94	96	0	5	0	0	4624
Quinclorac (75 DF) + pendimethalin	0.5 1.0	LPOST		93	75		94				0	0	4953
LSD (0.05)			7	4	12	10	14	12	4	4	NS	NS	NS

Table 22. Evaluation of clomazone (Command) application timings and rates, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... October 8, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: PPI = preplant incorporated; PRE - preemergence; DPRE = delayed preemergence.

Application type	PPI	PRE	DPRE
Date applied	May 13, 1997	May 14, 1997	May 22, 1997
Time	2:30 am	3:30 pm	8:30 am
Incorporation equipment	tiller	N/A	N/A
Air / Soil temperature (F)	81 / 70	84 / 68	66 / 65
Relative humidity (%)	32	56	70
Wind (mph, direction)	5-10	5-10	5-9
Weather	sunny	partly cloudy	sunny
Soil moisture	good	good	good
Crop stage / Height	N/A	N/A	N/A
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 20	15 / 20	15 / 18

Conclusions: This study evaluated clomazone (Command) at different rates and timings for barnyardgrass control. Clomazone at 0.6 to 1.0 lb/A had the most consistent control for the entire season across application timings. However, at these higher rates a preplant incorporated application resulted in more crop injury in the early season. No injury was observed by July 29. Rice yields did not differ among treatments.

Table 22.

			Weed control									
			Barnyardgrass (ECHCG)			Hemp sesbania SEBEX		Rice injury				
Herbicide	Rate	Application timing	6/13	7/9	7/29	6/13	7/9	6/2	6/13	7/9	7/29	Rice yield
	(lb/A)		- - -	- - -	- - -	- - -	(%)	- - -	- - -	- - -	- - -	(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	4965
Clomazone (4 EC)	0.1	PPI	73	79	58	16	26	3	5	0	0	4273
Clomazone (4 EC)	0.2	PPI	76	81	69	34	13	3	6	0	0	5181
Clomazone (4 EC)	0.4	PPI	84	90	90	34	21	5	6	0	0	4552
Clomazone (4 EC)	0.6	PPI	96	85	93	18	30	18	21	0	0	5849
Clomazone (4 EC)	0.8	PPI	94	88	89	44	29	18	19	0	0	5517
Clomazone (4 EC)	1.0	PPI	98	88	93	41	29	20	23	0	0	5839
Clomazone (3 ME)	0.1	PPI	66	85	51	25	16	1	5	0	0	4677
Clomazone (3 ME)	0.2	PPI	85	89	61	21	23	0	5	0	0	5455
Clomazone (3 ME)	0.4	PPI	88	88	64	40	15	4	8	0	0	4639
Clomazone (3 ME)	0.6	PPI	96	88	93	29	19	10	14	0	0	4941
Clomazone (3 ME)	0.8	PPI	75	86	77	33	24	10	14	0	0	5397
Clomazone (3 ME)	1.0	PPI	98	88	96	50	31	20	34	4	0	6142
Clomazone (3 ME)	0.1	PRE	84	93	66	39	26	1	6	0	0	5133
Clomazone (3 ME)	0.2	PRE	84	85	64	25	24	3	8	0	0	4667
Clomazone (3 ME)	0.4	PRE	95	88	87	26	24	8	5	0	0	5546
Clomazone (3 ME)	0.6	PRE	94	89	88	25	25	8	5	0	0	5368
Clomazone (3 ME)	0.8	PRE	97	91	93	38	29	13	9	0	0	4648
Clomazone (3 ME)	1.0	PRE	98	89	96	21	15	14	8	0	0	5320
Clomazone (3 ME)	0.1	DPRE	85	85	55	35	14	4	5	0	0	4946
Clomazone (3 ME)	0.2	DPRE	81	86	61	34	21	3	4	0	0	5244
Clomazone (3 ME)	0.4	DPRE	95	89	73	21	25	3	5	0	0	5887
Clomazone (3 ME)	0.6	DPRE	98	90	93	21	16	8	5	0	0	6281
Clomazone (3 ME)	0.8	DPRE	97	88	95	36	24	15	5	0	0	5488
Clomazone (3 ME)	1.0	DPRE	97	90	95	31	30	13	6	0	0	5988
LSD (0.05)			24	9	24	23	15	6	8	NS	NS	NS

Table 23. Evaluation of clomazone 3ME vs. 3G for weed control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... October 7, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: PRE = preemergence; DPRE = delayed preemergence; ME = microencapsulated formulation; G = granular formulation.

Application type	PRE	DPRE
Date applied	May 14, 1997	May 22, 1997
Time	4:00 pm	9:45 am
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	84 / 68	62 / 65
Relative humidity (%)	56	69
Wind (mph, direction)	5-10	5-10
Weather	partly cloudy	sunny
Soil moisture	good	good
Crop stage/Height	N/A	N/A
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 20	15 / 18

Conclusions: This study evaluated the 3 ME versus the 3G formulation of clomazone (Command). Little to no differences occurred with barnyardgrass control; however, bleaching injury was more pronounced when the granular formulation was used. Yields did not differ significantly.

Table 23.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 7/9	Weed control: Barnyardgrass (ECHCG) 7/30	Weed control: Hemp sesbania SEBEX 7/9	Effect on rice: Injury 7/9	Effect on rice: Injury 7/30	Effect on rice: Bleaching 6/2	Effect on rice: Bleaching 6/13
	(lb/A)		(%)						
Untreated			0	0	0	0	0	0	0
Clomazone (3ME)	0.4	PRE	89	93	25	0	0	6	3
Clomazone (3ME)	0.5	PRE	89	84	9	0	0	1	0
Clomazone (3ME)	0.6	PRE	90	93	14	0	0	9	4
Clomazone (3G)	0.4	PRE	90	88	29	0	0	17	15
Clomazone (3G)	0.5	PRE	90	85	24	0	0	15	18
Clomazone (3G)	0.6	PRE	90	92	34	0	0	16	16
Clomazone (3ME)	0.4	DPRE	88	91	14	0	0	3	0
Clomazone (3ME)	0.5	DPRE	89	97	24	0	0	4	0
Clomazone (3ME)	0.6	DPRE	90	94	24	0	0	3	0
Clomazone (3G)	0.4	DPRE	90	88	39	0	0	5	11
Clomazone (3G)	0.5	DPRE	89	86	19	0	0	11	19
Clomazone (3G)	0.6	DPRE	83	86	16	0	0	14	23
Quinclorac	0.5	DPRE	90	97	88	0	0	1	0
Thiobencarb	4.0	DPRE	75	58	19	0	0	0	0
Pendimethalin	1.0	DPRE	90	74	73	0	0	0	1
Pendimethalin + quinclorac	1.0 0.5	DPRE	90	97	89	0	0	3	0
Pendimethalin + thiobencarb	1.0 4.0	DPRE	90	75	76	0	0	1	0
LSD (0.05)			7	10	14	NS	NS	5	5

continued

Table 23. Continued.

Herbicide	Rate	Application timing	Effect on rice: Chlorosis 6/2	Chlorosis 6/13	Stand reduction 6/2	Stand reduction 6/13	Stunting 6/2	Stunting 6/13	Rice yield
	(lb/A)					(%)			
Untreated check			0	0	0	0	0	0	2848
Clomazone (3ME)	0.4	PRE	3	11	0	0	0	0	3433
Clomazone (3ME)	0.5	PRE	8	10	0	0	0	0	4298
Clomazone (3ME)	0.6	PRE	8	14	0	0	0	0	3712
Clomazone (3G)	0.4	PRE	8	16	0	1	0	5	4230
Clomazone (3G)	0.5	PRE	5	15	0	4	0	9	3294
Clomazone (3G)	0.6	PRE	9	15	0	6	0	9	4917
Clomazone (3ME)	0.4	DPRE	5	9	0	1	0	0	4014
Clomazone (3ME)	0.5	DPRE	6	6	0	0	0	0	2575
Clomazone (3ME)	0.6	DPRE	8	8	0	1	0	0	2997
Clomazone (3G)	0.4	DPRE	4	13	0	6	0	3	3894
Clomazone (3G)	0.5	DPRE	5	14	0	3	0	5	3923
Clomazone (3G)	0.6	DPRE	4	14	0	3	0	9	3529
Quinclorac	0.5	DPRE	3	6	0	1	0	0	3668
Thiobencarb	4.0	DPRE	1	9	0	3	0	0	3237
Pendimethalin	1.0	DPRE	0	10	0	3	0	0	4144
Pendimethalin + quinclorac	1.0 0.5	DPRE	6	11	0	1	0	0	4130
Pendimethalin + thiobencarb	1.0 4.0	DPRE	4	11	0	3	0	0	4581
LSD (0.05)			4	4	NS	NS	NS	4	NS

Table 24. Evaluation of quinclorac (Facet) formulations for grass control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; GR = granular formulation; DF = dry flowable formulation.

Application type	PRE	DPRE	EPOST
Date applied	May 14, 1997	May 22, 1997	June 5, 1997
Time	4:10 pm	1:20 pm	7:15 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	84 / 68	75 / 65	68 / 67
Relative humidity (%)	56	59	85
Wind (mph, direction)	5-10	5-8	2-5
Weather	partly cloudy	sunny	sunny
Soil moisture	good	good	dry
Crop stage / Height	N/A	N/A	2-3 lf / 2-5"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17	15 / 4 / 17
Gpa / Psi	15 / 20	15 / 18	15 / 22
Weed species (population)	– – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – –		
SEBEX (20-25 / m^2)	N/A	N/A	1-3 lf / 1-3"
ECHCG (800-1000 / m^2)	N/A	N/A	1-3 lf / 0.5-3"

Conclusions: This study evaluated the 75 DF (dry flowable) and 1.5 GR (granular) formulations of quinclorac at different application timings. Little to no differences occurred when comparing the two formulations applied PRE or DPRE. However, when the 1.5 GR formulation was applied EPOST, barnyardgrass control was significantly less when compared to the 75 DF formulation.

Table 24.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	Hemp sesbania (SEBEX) 6/13	7/9	7/30	Palmleaf morningglory (IPOWR) 6/13	Rice injury 6/2	6/13	7/9	7/30
	(lb/A)		– (%) –										
Untreated check			0	0	0	0	0	0	0	0	0	0	0
Quinclorac (1.5 GR)	0.25	PRE	90	73	40	89	73	38	88	0	3	0	0
Quinclorac (75 DF)	0.25	PRE	90	66	46	81	64	34	85	0	3	0	0
Quinclorac (1.5 GR)	0.375	PRE	95	78	64	89	80	66	95	0	3	0	0
Quinclorac (75 DF)	0.375	PRE	94	58	44	89	66	50	92	0	1	0	0
Quinclorac (1.5 GR)	0.5	PRE	96	86	73	95	83	69	93	0	4	0	0
Quinclorac (75 DF)	0.5	PRE	95	76	55	96	83	59	92	0	4	0	0
Quinclorac (1.5 GR)	0.25	DPRE	86	70	44	85	73	34	94	0	9	0	0
Quinclorac (75 DF)	0.25	DPRE	90	64	44	91	70	66	93	0	5	0	0
Quinclorac (1.5 GR)	0.375	DPRE	85	51	40	84	66	40	88	0	4	0	0
Quinclorac (75 DF)	0.375	DPRE	93	75	60	94	78	69	97	0	4	0	0
Quinclorac (1.5 GR)	0.5	DPRE	89	83	63	88	76	69	91	0	6	0	0
Quinclorac (75 DF)	0.5	DPRE	96	85	65	93	84	80	96	0	5	0	0
Quinclorac (75 DF) + thiobencarb	0.25 2.0	DPRE	93	70	61	96	81	78	97		3	0	0
Quinclorac (1.5 GR)	0.25	EPOST	56	55	50	70	73	63	73		6	0	0
Quinclorac (75 DF) + Agri-Dex (1%)	0.25	EPOST	84	84	73	93	88	86	93		6	0	0
Quinclorac (1.5 GR)	0.375	EPOST	69	71	40	70	80	83	70		5	0	0
Quinclorac (75 DF) + Agri-Dex (1%)	0.375	EPOST	90	86	68	94	86	83	90		5	0	0
Quinclorac (1.5 GR	0.5	EPOST	66	64	31	61	80	80	54		9	0	0
Quinclorac (75 DF) + Agri-Dex (1%)	0.5	EPOST	91	90	89	97	88	93	87		6	0	0
Quinclorac (75 DF) + (propanil + molinate)	0.188 2.0	EPOST	97	90	85	97	90	96	96		1	0	0
LSD (0.05)			14	15	14	8	9	13	10	NS	5	NS	NS

Table 25. Evaluation of F-8426 for rice weed control, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7
Planting date ..... May 14, 1997
Harvest date ..... October 8, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

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

Application type	PRE	DPRE	EPOST
Date applied	May 14, 1997	May 22, 1997	June 5, 1997
Time	4:15 pm	9:00 am	7:15 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	84 / 68	66 / 65	68 / 67
Relative humidity (%)	56	70	85
Wind (mph, direction)	5-10	5-9	2-5
Weather	partly cloudy	sunny	sunny
Soil moisture	good	good	dry
Crop stage / Height	N/A	N/A	2-3 lf / 2-5"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17	15 / 4 / 17
Gpa / Psi	15 / 20	15 / 18	15 / 22
Weed species (population)	– – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – –
SEBEX (4-8 / m^2)	N/A	N/A	1-3 lf / 2-3"
ECHCG (25-30 / m^2)	N/A	N/A	1-3 lf / 0.5-2"
IPOWR (6 / m^2)	N/A	N/A	1-4 lf / 1-3"

Conclusions: This study was designed to evaluate F-8426 with clomazone (Command). Weed control differed little among application timings and rates, and rice yields did not differ. Weed control with sulfentrazone (Authority) applied DPRE or EPOST was excellent, but rice was injured 75 and 64%, respectively.

Table 25.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/12	7/9	7/29	Hemp sesbania (SEBEX) 6/12	7/9	Palmleaf morningglory (IPOWR) 6/12	Rice injury 6/2	6/12	7/9	7/29	Rice yield
	(lb/A)							(%)					(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	4444
Clomazone fb F8426 +	0.6	PRE											
AG-98 (0.25%)	0.01	EPOST	97	90	85	97	89	70	8	6	0	0	4797
Clomazone fb F8426 +	0.6	PRE											
AG-98 (0.25%)	0.02	EPOST	98	91	81	98	88	74	8	13	0	0	5340
Clomazone fb F8426 +	0.6	PRE											
AG-98 (0.25%)	0.03	EPOST	98	91	83	98	90	97	11	15	0	0	4975
Clomazone fb	0.6	PRE											
F8426 +	0.02												
propanil	1.0	EPOST	98	90	90	98	89	97	11	8	0	0	4355
Clomazone fb	0.6	PRE											
F8426 +	0.02												
propanil	2.0	EPOST	97	91	85	98	88	94	8	10	0	0	5580
Clomazone fb	0.6	PRE											
F8426 +	0.02												
propanil	4.0	EPOST	97	93	88	98	90	87	9	13	0	0	5023
Clomazone fb	0.6	PRE											
thiobencarb	4.0	EPOST	98	90	93	89	79	75	11	10	0	0	4888
Clomazone fb	0.6	PRE											
(propanil + molinate)	6.0	EPOST	97	90	97	98	90	88	9	11	0	0	5517
Clomazone fb	0.6	PRE											
propanil	4.0	EPOST	98	91	85	95	84	94	11	10	0	0	4960
Clomazone fb	0.6	PRE											
quinclorac +	0.38												
Agri-Dex (1%)		EPOST	94	93	97	97	90	89	10	8	0	0	4600

continued

Table 25. Continued.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/12	7/9	7/29	Hemp sesbania (SEBEX) 6/12	7/9	Palmleaf morningglory (IPOWR) 6/12	Rice injury 6/2	6/12	7/9	7/29	Rice yield
	(lb/A)							(%)					(lb/A)
Clomazone fb triclopyr	0.6 fb 0.22	PRE fb EPOST	98	91	86	79	76	88	9	9	0	0	5306
Clomazone + sulfentrazone	0.6 + 0.3	PRE	97	91	93	33	33	89	11	9	0	0	4711
Clomazone fb sulfentrazone	0.6 fb 0.3	PRE fb DPRE	98	90	96	98	85	94	96	75	4	3	5316
Clomazone fb sulfentrazone + AG-98 (0.25%)	0.6 fb 0.3	PRE fb EPOST	98	90	95	95	88	96	9	64	28	0	5258
LSD (0.05)			4	3	10	15	13	25	4	6	4	NS	NS

Table 26. Evaluation of rice weed control programs containing thiobencarb (Bolero), Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: Applications based on rice growth stage. DPRE = delayed preemergence.

Application type	DPRE	2-3 lf	4-5 lf
Date applied	May 22, 1997	June 5, 1997	June 23, 1997
Time	1:00 pm	10:15 am	7:05 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	74 / 65	72 / 70	77 / 78
Relative humidity (%)	59	70	92
Wind (mph, direction)	5-10	2-5	0-2
Weather	partly cloudy	sunny	sunny
Soil moisture	good	dry	good
Crop stage / Height	N/A	2-3 lf / 2-5"	4-5 lf / 8"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	18 / 4 / 17	15 / 4 / 17	18 / 4 / 17
Gpa / Psi	15 / 18	15 / 22	15 / 18
Weed species (population)	– – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – –
SEBEX (15-20 / m^2)	N/A	1-3 lf / 1-3"	2-10 lf / 2-8"
ECHCG (400-600 / m^2)	N/A	1-3 lf / 0.5-3"	3 lf - 2 till / 1-8"

Conclusions: This study was designed to evaluate thiobencarb (Bolero) in rice weed control programs. Barnyardgrass control improved when thiobencarb plus pendimethalin (Prowl) or quinclorac (Facet) applied DPRE was followed by a POST application of propanil or propanil plus molinate at the 2- to 3-leaf or 4- to 5-leaf stage of rice.

Table 26.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/2	6/13	7/9	7/30	Hemp sesbania (SEBEX) 6/13	Rice injury 6/2	6/13	7/9	7/30
	(lb/A)		– – – – – – – – – – – – – – – – – – – –				(%)	– – – – – – – – – – – – – – – – – – – –			
Untreated check			0	0	0	0	0	0	0	0	0
Thiobencarb +	3.0										
quinclorac	0.5	DPRE	97	91	79	71	96	0	5	0	0
Thiobencarb +	2.0										
quinclorac fb	0.5	DPRE									
thiobencarb +	2.0										
(propanil + molinate)	4.5	2-3 lf	95	98	90	93	98	0	14	0	0
Thiobencarb +	4.0										
pendimethalin	1.0	DPRE	92	93	43	34	97	0	5	0	0
Pendimethalin fb	1.0	DPRE									
thiobencarb +	3.0										
(propanil + molinate)	4.5	2-3 lf	88	98	89	86	98	0	15	0	0
Thiobencarb +	2.0										
pendimethalin fb	1.0	DPRE									
thiobencarb +	2.0										
propanil	3.0	2-3 lf	91	90	53	43	97	0	10	0	0
Thiobencarb +	2.0										
pendimethalin fb	1.0	DPRE									
thiobencarb +	2.0										
(propanil + molinate)	4.5	4-5 lf	93	94	84	90	93	0	8	0	0
Thiobencarb +	3.0										
propanil	3.0	2-3 lf		92	55	31	97		14	0	0
Thiobencarb +	3.0										
(propanil + molinate)	4.5	2-3 lf		98	89	90	98		14	0	0
Thiobencarb +	2.0										
propanil fb	3.0	2-3 lf									
thiobencarb +	2.0										
propanil	3.0	4-5 lf		93	89	91	96		18	0	0
LSD (0.05)			6	6	10	15	3	NS	6	NS	NS

Table 27. Evaluation of V-10029 for weed control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... October 8, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: Applications based on rice growth stage. DPRE = delayed preemergence; POFL = post-flood; 1 Till = 1 tiller.

Application type	DPRE	2-3 lf	4-5 lf	POFL	1 Till
Date applied	May 22, 1997	June 5, 1997	June 23, 1997	July 8, 1997	July 11, 1997
Time	1:45 pm	11:00 am	9:10 am	9:00 am	7:53 a.m.
Incorporation equipment	N/A	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	75 / 65	76 / 71	86 / 78	83 / 81	80 / 78
Relative humidity (%)	59	66	84	82	82
Wind (mph, direction)	5-8	2-5	0-2	5-10	0-3
Weather	sunny	sunny	sunny	partly cloudy	partly cloudy
Soil moisture	good	dry	good	wet	wet
Crop stage/Height	N/A	2-3 lf / 2-5"	5 lf / 10"	4-5 lf	12-16 lf / PI
Sprayer type/mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type/Size	FF / 11002	FF / 11002	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	18 / 4 / 17	15 / 4 / 17	18 / 4 / 17	19 / 4 / 18	18 / 4 / 17
Gpa / Psi	15 / 18	15 / 20	15 / 18	15 / 21	15 / 18
Weed species (population)	– – – – – – – – – – – – – – – – –		(height / # leaves)		– – – – – – – – – – – – – – – – –
SEBEX (15-20/m^2)	N/A	1-3 lf / 1-3"	2-8 lf / 1-6"	2-8 lf / 1-6"	8-15 lf / 6-12"
ECHCG (40-50/m^2)	N/A	1-3 lf / 0.5-3"	2-5 lf / 1-3"	2-5 lf / 1-3"	2-3 till / 12-16"
IPOWR (5-8/m^2)	N/A	cot.-2 lf / 0.5-3"	1-4 lf / 1-4"	1-4 lf / 1-4"	1-4 lf / 1-4"

Conclusions: This study evaluated barnyardgrass, hemp sesbania and palmleaf morningglory control with V-10029. At the July 30 rating, barnyardgrass and hemp sesbania control was greater than 90% and palmleaf morningglory control was greater than 85% with any combination containing V-10029. All treatments with V-10029 except V-10029 by itself and thiobencarb + propanil fb V-10029 + thiobencarb yielded better than the untreated check.

Table 27.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	Hemp sesbania (SEBEX) 6/13	7/9	7/30	Palmleaf morningglory (IPOWR) 6/13	7/9	7/30	Rice injury 6/2	6/13	7/9	7/30	Rice yield
	(lb/A)		(%)													(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	2574
V10029 +	0.02															
Kinetic (0.25%)		PI			94			97			87				0	2266
(Propanil + molinate)	6.0	PI			70			97			50				0	3592
V-10029 +	0.02															
Kinetic (0.25%) fb		4-5 lf														
triclopyr	0.28	POFL	86	88	97	85	94	97	65	89	97		3	0	0	4712
(Propanil + molinate)	4.5	4-5 lf														
fb triclopyr	0.28	POFL	92	90	93	89	94	98	79	93	98		5	0	0	4168
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
Kinetic (0.25%)		4-5 lf	95	95	92	93	95	97	84	93	88	0	9	0	0	4398
Pendimethalin fb	1.0	DPRE														
propanil	4.0	4-5 lf	94	94	94	93	95	98	81	91	87	0	9	0	0	4591
Thiobencarb fb	3.0	DPRE														
V-10029 +	0.02															
Kinetic (0.25%)		4-5 lf	93	95	94	89	95	98	80	90	94	0	5	0	0	4168
Thiobencarb fb	3.0	DPRE														
(propanil + molinate)	4.5	4-5 lf	89	95	96	80	95	95	71	93	87	0	3	0	0	4533
Thiobencarb +	2.0															
propanil fb	3.0	2-3 lf														
V-10029 +	0.02															
thiobencarb +	2.0															
Kinetic (0.25%)		4-5 lf	96	95	97	97	95	97	93	95	97		21	0	0	3860
Thiobencarb +	2.0															
propanil fb	3.0	2-3 lf														
thiobencarb +	2.0															
propanil	3.0	4-5 lf	96	95	97	98	95	97	91	95	97		25	0	0	4610

continued

Table 27. Continued.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/30	Hemp sesbania (SEBEX) 6/13	7/9	7/30	Palmleaf morningglory (IPOWR) 6/13	7/9	7/30	Rice injury 6/2	6/13	7/9	7/30	Rice yield
	(lb/A)		(%)													(lb/A)
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
bensulfuron +	0.038															
Kinetic (0.25%)		4-5 lf	93	95	97	92	95	97	81	95	97	0	8	0	0	4322
Pendimethalin fb	1.0															
bensulfuron +	0.038															
propanil	3.0	4-5 lf	93	95	86	95	95	98	81	93	94	0	10	0	0	4168
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
bensulfuron +	0.038															
Kinetic (0.25%)		POFL	97	93	94	92	76	97	80	70	94	0	9	0	0	4437
Pendimethalin fb	1.0	DPRE														
bensulfuron	0.038	POFL	93	93	70	93	75	93	79	76	77	0	6	0	0	3918
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
Kinetic (0.25%)		POFL	90	93	97	93	76	98	74	83	98	0	9	0	0	4399
Pendimethalin fb	1.0	DPRE														
molinate	4.0	POFL	92	90	93	95	74	79	81	88	69	0	10	0	0	2804
Pendimethalin fb	1.0	DPRE														
V-10029 +	0.02															
triclopyr +	0.28															
Kinetic (0.25%)		POFL	92	95	96	93	76	95	76	69	90	0	5	0	0	4110
Pendimethalin fb	1.0	DPRE														
molinate +	4.0															
triclopyr	0.28	POFL	96	95	95	93	80	97	84	83	97	0	9	0	0	4110
Thiobencarb +	2.0															
propanil fb	3.0	2-3 lf														
V-10029 +	0.02															
thiobencarb	2.0	4-5 lf	96	95	95	98	95	97	88	95	97		21	0	0	4321
LSD (0.05)			7	4	8	7	7	4	9	8	12	NS	5	NS	NS	1320

Table 28. Preemergence weed control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7
Planting date ..... May 14, 1997
Harvest date ..... October 7, 1997
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; EC = emulsifiable concentrate formulation; ME = micro-encapsulated formulation.

Application type	PRE	DPRE	EPOST
Date applied	May 14, 1997	May 22, 1997	June 5, 1997
Time	3:15 pm	7:00 am	6:30 am
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	84 / 68	64 / 65	68 / 67
Relative humidity (%)	56	54	72
Wind (mph, direction)	5-10	4-6	2-4
Weather	partly cloudy	sunny	sunny
Soil moisture	good	good	dry
Crop stage / Height	N/A	N/A	2-3 lf / 2-5"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	15 / 4 / 17	18 / 4 / 17	15 / 4 / 17
Gpa / Psi	15 / 20	15 / 18	15 / 22
Weed species (population)	– – – – – – – – – – – (height / # leaves) – – – – – – – – – – –		
SEBEX (6-10 / m^2)	N/A	N/A	2-3 lf / 1-3"
ECHCG (12-15 / m^2)	N/A	N/A	2-3 lf / 0.5-2"

Conclusions: This study evaluated preemergence timings of clomazone (Command) compared to standard DPRE programs. Barnyardgrass control was generally greater than 90% at the early rating across treatments. Clomazone at all rates PPI and at 0.6 lb/A PRE or DPRE had 10% or greater rice injury at the earliest rating date. However, rice injury was gone approximately 8 weeks later. In general, clomazone applied DPRE or EPOST did not improve rice yield compared to the untreated check.

Table 28.

Herbicide	Rate	Application timing	Weed control: Barnyardgrass (ECHCG) 6/13	7/9	7/29	Hemp sesbania (SEBEX) 6/13	7/9	Rice injury 6/2	6/13	7/9	7/29	Rice yield
	(lb/A)		(%)									(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	4027
Clomazone (4EC)	0.4	PPI	98	88	96	64	58	11	6	0	0	4591
Clomazone (4EC)	0.5	PPI	96	89	93	81	66	16	14	0	0	4859
Clomazone (4EC)	0.6	PPI	97	89	89	69	61	13	11	0	0	4795
Quinclorac	0.375	PPI	98	89	88	90	84	5	4	0	0	5039
Quinclorac	0.5	PPI	98	86	93	95	84	4	8	0	0	5371
Clomazone (4EC) + quinclorac	0.5 0.375	PPI	98	93	95	97	89	5	6	0	0	4757
Clomazone (3ME)	0.4	PRE	96	88	92	74	55	9	6	0	0	4987
Clomazone (3ME)	0.5	PRE	93	86	90	63	60	11	8	0	0	4578
Clomazone (3ME)	0.6	PRE	98	88	91	81	58	8	6	0	0	5314
Quinclorac	0.5	PRE	98	91	84	97	89	4	5	0	0	5083
Clomazone (3ME) + quinclorac	0.5 0.375	PRE	98	90	92	97	84	5	8	0	0	4883
Clomazone (3ME)	0.4	DPRE	94	88	95	74	49	9	8	0	0	4230
Clomazone (3ME)	0.5	DPRE	89	85	54	88	69	5	6	0	0	4562
Clomazone (3ME)	0.6	DPRE	98	88	90	66	61	10	4	0	0	5102
Quinclorac	0.25	DPRE	59	86	48	49	51	5	1	0	0	4331
Quinclorac	0.375	DPRE	98	89	93	94	83	5	6	0	0	4328
Clomazone (3ME) + quinclorac	0.5 0.375	DPRE	90	90	69	84	63	5	6	0	0	4507
Clomazone (3ME) + quinclorac	0.4 0.25	DPRE	97	90	96	95	88	5	8	0	0	4712
Thiobencarb	4.0	DPRE	90	86	54	51	60	4	5	0	0	4005
Pendimethalin	1.0	DPRE	98	90	88	90	76	8	8	0	0	4979
Clomazone (4EC) + thiobencarb	0.5 2.0	DPRE	95	88	86	83	58	9	9	0	0	4552
Clomazone (4EC) + pendimethalin	0.5 1.0	DPRE	98	90	93	93	80	10	6	0	0	5275

continued

Table 28. Continued.

			Weed control									
			Barnyardgrass (ECHCG)			Hemp sesbania (SEBEX)		Rice injury				Rice
Herbicide	Rate	Application timing	6/13	7/9	7/29	6/13	7/9	6/2	6/13	7/9	7/29	yield
	(lb/A)		(%)									(lb/A)
Quinclorac + thiobencarb	0.375 2.0	DPRE	93	89	91	92	83	5	5	0	0	4917
Quinclorac + pendimethalin	0.375 1.0	DPRE	97	90	92	97	89	5	8	0	0	5486
Quinclorac + thiobencarb	0.25 2.0	DPRE	98	89	97	95	83	5	4	0	0	4898
Quinclorac + pendimethalin	0.25 1.0	DPRE	98	91	96	93	89	5	6	0	0	4499
Clomazone (3ME)	0.4	EPOST	86	89	93	69	51		4	0	0	4543
Clomazone (3ME)	0.5	EPOST	93	89	95	79	59		10	0	0	5289
Clomazone (3ME)	0.6	EPOST	95	91	95	80	65		13	0	0	4648
LSD (0.05)			10	5	10	13	11	5	6	NS	NS	720

Table 29. Thiobencarb (Bolero) for weed control in rice, Rohwer.

TEST INFORMATION

Location ..... Rohwer
Experimental Design / replications ..... RCB / 4
Plot size ..... 4.5 ft by 17 ft
Row width / Number of rows per plot ..... 6.5 in / 9 rows
Soil type ..... Silty clay (8% sand, 49% silt, 43% clay)
% OM / pH ..... 3.5 / 6.7

Planting date ..... May 14, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Lemont
Date of Flood ..... June 25, 1997

Comments: DPRE = delayed preemergence; EPOST = early postemergence; PREFL = preflood; POFL = postflood.

Application type	DPRE	EPOST	PREFL	POFL
Date applied	May 22, 1997	June 5, 1997	June 23, 1997	July 8, 1997
Time	1:15 pm	11:00 am	6:55 am	7:15 am
Incorporation equipment	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	75 / 65	72 / 70	77 / 78	83 / 81
Relative humidity (%)	59	70	90	82
Wind (mph, direction)	5-8	2-5	0	5-10
Weather	sunny	sunny	sunny	partly cloudy
Soil moisture	good	dry	good	wet
Crop stage / Height	N/A	2-3 lf / 2-5"	4-5 lf / 8"	4-5 lf / 15"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	FF / 11002	FF / 11002	FF / 11002	FF / 11002
Boom ht / # Noz / Spacing (in.)	18 / 4 / 17	15 / 4 / 17	18 / 4 / 17	15 / 4 / 17
Gpa / Psi	15 / 18	15 / 22	15 / 18	15 / 22
Weed species (population)	– – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – –			
SEBEX (6-10 / m^2)	N/A	1-3 lf / 1-3"	3-6 lf / 2-3"	3-10 lf / 2-6"
ECHCG (12-15 / m^2)	N/A	1-3 lf / 0.5-2"	3-6 lf / 2-5"	5 lf - 3 till / 5-10"

Conclusions: This study evaluated thiobencarb (Bolero) for barnyardgrass control. Little to no difference in barnyardgrass control occurred between treatments across rating dates. Rice injury was above 10% for several treatments at early rating; however, no injury was observed at the last rating.

Table 29.

Herbicide	Rate	Application timing	Barnyardgrass (ECHCG) control 6/2	6/13	7/9	7/30	Rice injury 6/2	6/13	7/9	7/30
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	0
Quinclorac +	0.5									
pendimethalin fb	1.0	DPRE								
thiobencarb	3.0	PREFL	90	97	86	96	0	5	0	0
Quinclorac +	0.5									
pendimethalin fb	1.0	DPRE								
thiobencarb	4.0	PREFL	88	95	84	92	0	8	0	0
Propanil fb	3.0	EPOST								
thiobencarb	3.0	PREFL		90	86	86		13	0	0
Propanil fb	3.0	EPOST								
thiobencarb	4.0	PREFL		94	81	85		9	0	0
(Propanil + molinate) fb	4.5	EPOST								
thiobencarb	3.0	PREFL		95	90	92		11	0	0
(Propanil + molinate) fb	4.5	EPOST								
thiobencarb	4.0	PREFL		96	86	94		10	0	0
(Propanil + molinate) fb	4.5	EPOST								
bensulfuron	0.038	POFL		95	84	81		10	0	0
LSD (0.05)			8	3	7	10	NS	5	NS	NS

Table 30. Clomazone (Command) injury on rice (rolled vs. not rolled seedbed), Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 3
Plot size ..... 10 ft by 50 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.0 / 4.9

Planting date ..... May 7, 1997
Harvest date ..... September 16, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: PPI's were applied to emerged 1- to 2-leaf (60/ft^2) broadleaf signalgrass and incorporated twice. Seedbed was rolled in appropriate plots. PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence.

Application type	PPI	PRE	DPRE
Date applied	May 7, 1997	May 7, 1997	May 12, 1997
Time	8:50 am	5:00 pm	2:50 pm
Incorporation equipment	S-Tine	N/A	N/A
Air/Soil temperature (F)	70 / 60	78 / 70	60 / 62
Relative humidity (%)	45	44	54
Wind (mph, direction)	3	3	4
Weather	partly cloudy	mostly cloudy	cloudy
Soil moisture	moist	moist	moist
Crop stage/Height	N/A	N/A	N/A
Sprayer type/mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type/Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	18 / 6 / 20
Gpa / Psi	10 / 23	10 / 23	10 / 23

Conclusions: We have reported less injury from PPI treatments with Command than other investigators. We felt it may have been due to rolling and planting in a firm seedbed. In this study we looked at 0.5 lb/A of Command at various timings where the seedbed was rolled firm prior to planting or not rolled resulting in a loose seedbed. There was a little more PPI injury in general, but no conclusive differences, between rolling or not rolling. While not significantly different, yield trends were lower in the PPI treatments.

Table 30.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control 5/22	5/30	6/17	Rice injury 5/22	5/30	6/17	6/27	7/22	8/21	9/2	Rice yield
	(lb/A)		– – – – – –	– – –	– – –	– – –	(%)	– – –	– – –	– – –	– – –	– – –	(lb/A)
Treatments 1-5 rolled:													
Pendimethalin +	1.0												
quinclorac	0.25	DPRE	100	98	100	0	20	13	3	0	0	5	6705
Clomazone (4EC)	0.5	PPI	100	95	100	47	35	30	17	0	0	0	5985
Clomazone (3ME)	0.5	PPI	100	95	100	30	28	47	33	7	3	3	5670
Clomazone (3ME)	0.5	PRE	100	93	100	40	18	17	12	0	0	0	6435
Clomazone (3ME)	0.5	DPRE	100	95	100	47	17	15	5	0	0	0	5670
Treatments 6-10 not-rolled:													
Pendimethalin +	1.0												
quinclorac	0.25	DPRE	100	98	100	7	13	0	3	0	0	0	6705
Clomazone (4EC)	0.5	PPI	100	97	100	30	45	42	32	13	7	8	5625
Clomazone (3ME)	0.5	PPI	100	95	100	37	25	35	20	2	0	0	5445
Clomazone (3ME)	0.5	PRE	100	92	100	50	17	23	3	0	0	0	6525
Clomazone (3ME)	0.5	DPRE	100	95	100	47	17	10	5	0	0	0	6300
LSD (0.05)			NS	NS	NS	13	13	10	8	NS	NS	NS	NS

Table 31. Clomazone (Command 3 ME) and quinclorac (Facet) levee control, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 3
Plot size ..... 10 ft by 50 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.0 / 4.9

Planting date ..... May 7, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: PPI's were applied to 1- to 2-leaf broadleaf signalgrass and incorporated twice. PPI = preplant incorporated; PRE = preemergence.

Application type	PPI	PRE
Date applied	May 7, 1997	May 7, 1997
Time	8:50 am	3:40 pm
Incorporation equipment	S-Tine	N/A
Air / Soil temperature (F)	70 / 60	78 / 70
Relative humidity (%)	45	44
Wind (mph, direction)	3	3
Weather	partly cloudy	mostly cloudy
Soil moisture	moist	moist
Crop stage / Height	N/A	N/A
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20
Gpa / Psi	10 / 23	10 / 23

Conclusions: This study was designed to compare weed control when herbicides were applied on flat ground before pulling the levees (trts. 2, 4, 7 and 9), when additional herbicide was applied to the levees after formation (trts. 3, 5, and 8), and when both the paddy and levee were sprayed after levee formation (trts. 6 and 10). Plots with additional herbicide applied to the levees or sprayed after levee formation had the best weed control.

Table 31.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control									
			Plots					Levees				
			5/22	5/30	6/27	7/22	9/2	5/30	6/17	6/27	7/22	9/2
	(lb/A)		(%)									
Untreated check			0	0	0	0	0	0	0	0	0	0
Clomazone (pull levee)	0.5	PPI	100	90	93	100	100	57	53	27	4	31
Clomazone (pull levee) fb clomazone (spray levee only)	0.5 0.3	PPI PRE	100	90	100	100	93	77	94	80	43	18
Clomazone (pull levee)	0.5	PRE	100	93	100	100	100	67	58	35	5	35
Clomazone (pull levee) + clomazone (spray levee only)	0.5 0.3	PRE	100	92	100	100	100	78	96	80	32	34
Pull levee; clomazone (spray plot and levee)	0.5	PRE	100	92	100	100	100	78	94	77	20	46
Quinclorac (pull levee)	0.375	PPI	100	95	100	100	100	53	74	53	18	57
Quinclorac (pull levee) fb quinclorac (spray levee only)	0.375 0.25	PPI PRE	100	93	100	100	100	87	95	78	47	53
Quinclorac (pull levee)	0.375	PRE	100	93	100	100	100	70	68	38	17	55
Pull levee; quinclorac (spray plot and levee)	0.375	PRE	100	95	100	100	100	87	97	83	42	38
LSD (0.05)			1	4	6	1	6	20	13	24	14	20

continued

Table 31. Continued.

Herbicide	Rate	Application timing	Rice injury 5/22	5/30	6/17	6/27	7/22	9/2
	(lb/A)		(%)					
Untreated check			0	0	0	0	0	0
Clomazone (pull levee)	0.5	PPI	22	28	28	0	0	0
Clomazone (pull levee) fb clomazone (spray levee only)	0.5 0.3	PPI PRE	30	35	33	8	0	7
Clomazone (pull levee)	0.5	PRE	40	22	12	5	0	0
Clomazone (pull levee) + clomazone (spray levee only)	0.5 0.3	PRE	72	28	25	0	0	0
Pull levee; clomazone (spray plot and levee)	0.5	PRE	58	22	8	0	0	0
Quinclorac (pull levee)	0.375	PPI	3	10	0	0	0	0
Quinclorac (pull levee) fb quinclorac (spray levee only)	0.375 0.25	PPI PRE	7	10	0	0	0	0
Quinclorac (pull levee)	0.375	PRE	10	10	0	0	0	0
Pull levee; quinclorac (spray plot and levee)	0.375	PRE	15	12	0	0	0	0
LSD (0.05)			15	6	9	NS	NS	NS

Table 32. Clomazone (Command) in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.0 / 4.9

Planting date ..... May 7, 1997
Harvest date ..... September 17, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: PPI's were applied to emerged broadleaf signalgrass (1- to 2-lf, approx 30/ft^2), then incorporated with a field cultivator to a depth of 3 in. Light rainfall occurred during DPRE application. PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence; ME = microencapsulated formulation; G = granular formulation.

Application type	PPI	PRE	DPRE
Date applied	May 7, 1997	May 7, 1997	May 12, 1997
Time	8:50 am	2:00 pm	3:15 pm
Incorporation equipment	S-Tine	N/A	N/A
Air/Soil temperature (F)	70 / 60	78 / 70	60 / 62
Relative humidity (%)	45	44	66
Wind (mph, direction)	3	3	4
Weather	partly cloudy	mostly cloudy	cloudy
Soil moisture	moist	moist	moist
Crop stage/Height	N/A	N/A	N/A
Sprayer type/mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type/Size	Driftguard / 110015	Driftguard / 110015	
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	18 / 6 / 20
Gpa / Psi	10 / 23	10 / 23	10 / 24
Weed species	– – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – –		
BRAPP	1-2 lf		

Conclusions: There was significant injury early from higher rates of clomazone at all timings. There was excellent broadleaf signalgrass control in most treatments. Rates of 0.3 to 0.4 lb/A continue to be very consistent with little injury on silt loam soils. Clomazone continues to be very promising as a rice herbicide. The 3 ME formulation to date has been more consistent in performance than the 3G.

Table 32

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control							Rice injury						Rice yield
			5/22	5/30	6/17	6/27	7/22	8/21	8/27	5/22	5/30	6/17	6/27	7/22	8/21	
	(lb/A)		– (%) –													(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0	3825
Clomazone (3ME)	0.3	PPI	93	78	84	95	98	96	94	19	23	15	1	0	0	6615
Clomazone (3ME)	0.4	PPI	100	83	99	88	100	100	96	28	25	19	4	0	0	5625
Clomazone (3ME)	0.5	PPI	100	83	100	99	100	100	100	21	29	39	16	0	0	4995
Clomazone (3ME)	0.6	PPI	100	85	100	95	100	100	99	40	36	48	28	0	0	5175
Clomazone (3ME)	0.3	PRE	99	86	100	100	100	100	98	25	16	6	0	0	0	6435
Clomazone (3ME)	0.4	PRE	100	86	100	100	100	100	100	43	21	11	4	0	3	6030
Clomazone (3ME)	0.5	PRE	89	85	100	98	100	100	100	40	30	23	12	0	0	5535
Clomazone (3ME)	0.6	PRE	100	88	100	98	100	100	100	55	39	31	13	0	0	5895
Clomazone (3G)	0.4	PRE	89	76	91	93	98	99	94	43	26	26	8	0	0	5535
Clomazone (3G)	0.5	PRE	76	80	95	91	100	95	89	48	25	28	8	0	0	5400
Clomazone (3G)	0.6	PRE	90	85	100	98	100	96	95	48	35	35	19	0	0	5445
Clomazone (3ME)	0.3	DPRE	63	85	98	99	100	100	100	33	20	10	10	0	0	5895
Clomazone (3ME)	0.4	DPRE	86	84	100	99	100	100	100	45	23	9	3	0	0	6075
Clomazone (3ME)	0.5	DPRE	93	83	100	98	100	100	100	35	30	15	3	0	0	6525
Clomazone (3ME)	0.6	DPRE	90	85	100	98	100	100	100	55	26	19	9	0	3	5850
Clomazone (3G)	0.4	DPRE	73	83	98	98	99	99	98	40	25	33	6	0	0	5805
Clomazone (3G)	0.5	DPRE	93	85	100	96	100	99	100	38	29	30	14	0	0	6120
Clomazone (3G)	0.6	DPRE	78	81	98	95	100	100	95	48	28	34	23	0	0	5940
Quinclorac	0.25	PPI	98	88	93	99	100	99	100	0	10	1	0	0	0	5850
Quinclorac	0.375	PPI	100	89	100	100	100	100	100	0	14	1	0	0	0	6435
Quinclorac	0.25	PRE	95	88	100	96	100	100	100	0	10	0	0	0	0	6615
Quinclorac	0.375	PRE	100	90	100	100	100	100	100	5	13	3	4	0	0	6885
Quinclorac	0.375	DPRE	100	90	100	100	100	100	100	8	11	0	4	0	0	6705
Thiobencarb	4.0	DPRE	63	40	53	73	60	35	48	3	10	0	3	0	0	5265
Pendimethalin	1.0	DPRE	85	55	73	73	58	63	48	0	11	0	0	0	0	5490
Clomazone (3ME) + quinclorac	0.3 0.25	PPI	98	86	100	93	100	100	100	15	21	23	8	0	0	6840
Clomazone (3ME) + quinclorac	0.3 0.25	PRE	93	79	98	96	100	100	99	30	21	11	4	0	0	6165

continued

Table 32. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control							Rice injury						Rice yield
			5/22	5/30	6/17	6/27	7/22	8/21	8/27	5/22	5/30	6/17	6/27	7/22	8/21	
	(lb/A)		– (%) –													(lb/A)
Clomazone (3ME) + quinclorac	0.3 0.25	DPRE	90	89	99	96	100	100	98	23	11	4	3	0	0	6165
Clomazone (3ME) + thiobencarb	0.3 2.0	DPRE	83	81	98	99	99	99	95	28	14	0	3	0	0	6795
LSD (0.05)			10	8	5	7	4	4	9	10	6	10	13	NS	3	1116

Table 33. IMI-tolerant rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7 in / 17 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 8, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / IMI rice - 93AS3510 IT
Date of Flood ..... June 19 and 20, 1997

Comments: IMI-tolerant rice is genetically transformed to tolerate imidazolinone herbicides. August 20 rating: hemp sesbania unequally distributed over test; thick stand in middle of test, but not on edges. In thick areas, trts. 24, 25, 29, and 30 appeared to control hemp sesbania but results are inconclusive due to poor population distribution. PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; PREFL = preflood; and POFL = postflood.

Application type	PPI	PRE	DPRE	EPOST	PREFL	POFL
Date applied	May 8, 1997	May 8, 1997	May 12, 1997	June 2, 1997	June 18, 1997	June 27, 1997
Time	10:30 am	4:50 pm	5:45 pm	12:30 pm	11:00 am	10:25 am
Incorporation equipment	S-Tine	N/A	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	77 / 68	89 / 80	60 / 62	67 / 62	86 / 74	87 / 80
Relative humidity (%)	58	32	54	70	45	65
Wind (mph, direction)	5	1	4	5	0	0
Weather	mostly cloudy	partly cloudy	cloudy	cloudy	clear	clear
Soil moisture	moist	moist	moist	damp	soggy	wet
Crop stage / Height	N/A	N/A	N/A	2-3 lf / 3"	4-5 tiller / 7.5"	tillered / 9"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	18 / 6 / 20	18 / 6 / 20	22 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 22	10 / 22	10 / 24	10 / 24	10 / 22	10 / 22
Weed species (population):	– (height / # leaves) –					
BRAPP (10 to 12 / ft^2)	N/A	N/A	N/A	2 lf / 0.5-3"	1 lf / 0.5-2"	3 lf / 7"
ECLAL (6 to 12 / ft^2)	N/A	N/A	N/A	2 lf / 0.5-2"	2-4 lf / 3"	6 lf / 4"
SEBEX (<1 / ft^2)	N/A	N/A	N/A	2 lf / 3"		12 lf / 20"

Conclusions: Little injury occurred with any treatment at this location. Most treatments failed to control hemp sesbania and the test was not harvested. Imazethapyr provided excellent control of broadleaf signalgrass at all rates and timings. Imazaquin also provided excellent grass control and better control of broadleaf and aquatic weeds. The rice was a short-season variety with very poor yield potential.

Table 33.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/9	6/18	7/3	7/23	8/20	8/25	Eclipta (ECLAL) 6/9	6/18
	(lb/A)		(%)								
Untreated check			0	0	0	0	0	0	0	0	0
Imazethapyr	0.063	PPI	95	99	98	100	100	99	95	0	0
Imazethapyr	0.094	PPI	98	99	100	100	100	100	100	33	15
Imazethapyr	0.125	PPI	100	99	100	100	100	100	100	88	70
Imazethapyr	0.063	PRE	100	96	99	100	100	100	100	46	24
Imazethapyr	0.094	PRE	100	99	100	100	100	100	100	86	53
Imazethapyr	0.125	PRE	100	100	100	100	100	100	100	98	94
Imazethapyr	0.063	DPRE	98	99	100	100	100	100	100	44	0
Imazethapyr	0.094	DPRE	99	96	96	100	100	100	100	20	13
Imazethapyr	0.125	DPRE	99	100	100	100	100	100	100	78	61
Imazethapyr + pendimethalin	0.063 1.0	DPRE	100	100	100	100	100	100	100	66	31
Imazethapyr + pendimethalin	0.094 1.0	DPRE	99	100	100	100	100	100	100	48	64
Imazethapyr + pendimethalin	0.125 1.0	DPRE	100	100	99	100	100	100	100	96	73
Imazethapyr + Activator 90 (0.25%)	0.063	EPOST	0	66	100	100	100	100	100	43	70
Imazethapyr + Activator 90 (0.25%)	0.094	EPOST	0	73	100	100	100	100	100	53	48
Imazethapyr + Activator 90 (0.25%)	0.125	EPOST	0	89	100	100	100	100	100	79	64
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PPI EPOST	91	99	100	100	100	100	100	98	64

continued

Table 33. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/9	6/18	7/3	7/23	8/20	8/25	Eclipta (ECLAL) 6/9	6/18
	(lb/A)		(%)								
Imazethapyr fb	0.063	PRE									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	96	100	100	100	100	100	100	98	91
Imazethapyr fb	0.063	DPRE									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	96	100	100	100	100	100	100	91	74
Pendimethalin +	1.0										
imazethapyr fb	0.063	DPRE									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	93	99	100	100	100	100	100	93	83
Imazaquin	0.125	PPI	99	98	96	100	100	100	98	96	95
Imazaquin +	0.063										
imazethapyr	0.063	PPI	99	100	100	100	100	100	100	99	93
Imazaquin fb	0.125	PPI									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	98	100	100	100	100	100	100	99	98
Imazethapyr fb	0.063	PPI									
imazaquin +	0.125										
Activator 90 (0.25%)		EPOST	98	100	100	100	100	100	100	100	100
Propanil (Super Wham) +	3.0										
imazethapyr +	0.063										
Penetrator Plus (1 pt/A)		EPOST	0	100	100	100	100	100	100	100	100
Imazethapyr +	0.063										
Activator 90 (0.25%) fb		EPOST									
imazethapyr +	0.063										
Activator 90 (0.25%)		PREFL	0	73	99	100	100	100	100	69	85
Imazethapyr +	0.063										
Activator 90 (0.25%) fb		EPOST									
imazethapyr +	0.063										
Activator 90 (0.25%)		POFL	0	61	96	100	100	100	100	0	0

continued

Table 33. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/9	6/18	7/3	7/23	8/20	8/25	Eclipta (ECLAL) 6/9	6/18
	(lb/A)		(%)								
Imazethapyr +	0.125										
Activator 90 (0.25%)		POFL	0	0	15	41	100	100	95	0	0
Pendimethalin +	1.0										
quinclorac fb	0.188	DPRE									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	99	100	100	100	100	100	100	100	100
Pendimethalin +	1.0										
quinclorac fb	0.188	DPRE									
propanil (Super Wham)	3.0										
+ triclopyr +	0.25										
Penetrator Plus (1 pt/A)		PREFL	99	100	98	100	100	100	100	100	99
LSD (0.05)			6	7	4	2	1	1	4	22	19

continued

Table 33. Continued.

Herbicide	Rate	Application timing	Hemp sesbania (SEBEX) control 7/23	8/25	Rice injury 6/2	6/9	6/18	7/3	7/23	8/20	8/25
	(lb/A)		(%)								
Untreated check			0	0	0	0	0	0	0	0	0
Imazethapyr	0.063	PPI	0	0	0	0	0	0	0	0	0
Imazethapyr	0.094	PPI	0	0	0	0	0	0	0	0	0
Imazethapyr	0.125	PPI	0	0	0	0	0	0	0	0	0
Imazethapyr	0.063	PRE	0	0	0	0	0	0	0	0	0
Imazethapyr	0.094	PRE	0	0	0	0	0	0	0	0	0
Imazethapyr	0.125	PRE	0	0	0	0	0	0	0	0	0
Imazethapyr	0.063	DPRE	0	0	0	0	0	0	0	0	0

continued

Table 33. Continued.

Herbicide	Rate	Application timing	Hemp sesbania (SEBEX) control		Rice injury						
			7/23	8/25	6/2	6/9	6/18	7/3	7/23	8/20	8/25
	(lb/A)		----------			(%)					
Imazethapyr	0.094	DPRE	0	0	0	0	0	0	0	0	0
Imazethapyr	0.125	DPRE	0	0	0	0	0	0	0	0	0
Imazethapyr + pendimethalin	0.063 1.0	DPRE	0	0	0	0	0	0	0	0	0
Imazethapyr + pendimethalin	0.094 1.0	DPRE	0	0	0	0	0	0	0	0	0
Imazethapyr + pendimethalin	0.125 1.0	DPRE	0	0	0	0	0	0	0	0	0
Imazethapyr + Activator 90 (0.25%)	0.063	EPOST	0	0	0	0	0	0	0	0	0
Imazethapyr + Activator 90 (0.25%)	0.094	EPOST	0	0	0	0	0	0	0	0	0
Imazethapyr + Activator 90 (0.25%)	0.125	EPOST	0	0	0	3	5	0	3	0	0
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PPI EPOST	0	0	0	0	0	0	0	0	0
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PRE EPOST	0	0	0	0	0	0	0	0	0
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	DPRE EPOST	0	0	0	0	0	0	4	0	0
Pendimethalin + imazethapyr fb imazethapyr + Activator 90 (0.25%)	1.0 0.063 0.063	DPRE EPOST	0	0	0	0	0	0	0	0	0
Imazaquin	0.125	PPI	0	0	0	0	0	0	0	0	0
Imazaquin + imazethapyr	0.063 0.063	PPI	0	0	0	0	0	0	0	0	0

continued

Table 33. Continued.

Herbicide	Rate	Application timing	Hemp sesbania (SEBEX) control		Rice injury						
			7/23	8/25	6/2	6/9	6/18	7/3	7/23	8/20	8/25
	(lb/A)		----------			(%)					
Imazaquin fb	0.125	PPI									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	0	0	0	0	3	0	3	0	0
Imazethapyr fb	0.063	PPI									
imazaquin +	0.125										
Activator 90 (0.25%)		EPOST	100	98	0	0	0	0	3	0	0
Propanil (Super Wham) +	3.0										
imazethapyr +	0.063										
Penetrator Plus (1 pt/A)		EPOST	100	99	0	24	3	0	5	0	0
Imazethapyr +	0.063										
Activator 90 (0.25%) fb		EPOST									
imazethapyr +	0.063										
Activator 90 (0.25%)		PREFL	0	0	0	0	0	0	0	0	0
Imazethapyr +	0.063										
Activator 90 (0.25%) fb		EPOST									
imazethapyr +	0.063										
Activator 90 (0.25%)		POFL	0	0	0	0	0	0	0	0	0
Imazethapyr +	0.125										
Activator 90 (0.25%)		POFL	0	0	0	0	0	0	33	0	0
Pendimethalin +	1.0										
quinclorac fb	0.188	DPRE									
imazethapyr +	0.063										
Activator 90 (0.25%)		EPOST	100	98	0	0	3	0	0	0	0
Pendimethalin +	1.0										
quinclorac fb	0.188	DPRE									
propanil (Super Wham)	3.0										
+ triclopyr +	0.25										
Penetrator Plus (1 pt/A)		PREFL	100	100	0	0	1	0	10	0	0
LSD (0.05)			1	2	NS	2	NS	NS	6	NS	NS

Table 34. IMI-tolerant rice, Stuttgart.

TEST INFORMATION

Location ..... Stuttgart
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Crowley silt loam (8% sand, 75% silt, 16% clay)
% OM / pH ..... 1.6 / 4.5

Planting date ..... May 13, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / 93AS3510
Date of Flood .....

Comments: IMI-tolerant rice is genetically transformed to tolerate imidazolinone herbicides. PPI = preplant incorporated; PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; PREFL = preflood; and POFL = postflood.

Application type	PPI	PRE	DPRE	EPOST	PREFL	POFL
Date applied	May 13, 1997	May 13, 1997	May 23, 1997	June 5, 1997	June 19, 1997	June 25, 1997
Time	12:15 am	5:00 pm	11:50 am	12:05 pm	11:00 am	10:50 am
Incorporation equipment	S-Tine	N/A	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	75 / 78	80 / 77	73 / 73	76 / 65	92 / 81	82 / 78
Relative humidity (%)	30	29	53	36	41	60
Wind (mph, direction)	3	4	2.5	2	3.5	4
Weather	clear	clear	cloudy	partly cloudy	clear	cloudy
Soil moisture	dry	dry	soggy	dry	damp	wet
Crop stage / Height	N/A	N/A	N/A	tillering / 5"	tillering / 7"	/ 30"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	18 / 6 / 20	20 / 6 / 20	22 / 6 / 20	28 / 6 / 20
Gpa / Psi	10 / 22	10 / 22	10 / 22	10 / 26	10 / 24	10 / 19
Weed species:	– – – – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – – – –					
ORYSA	N/A	N/A	N/A	2 lf / 5"	4 tillers / 6"	30"

Conclusions: Severe injury resulted from the DPRE treatments at this location. All treatments except those applied POFL provided excellent red rice control. Being a short season variety, the crop was destroyed to prevent any possible outcrossing; thus yields were not taken.

Table 34.

Herbicide	Rate	Application timing	Weed control							
			Red rice (ORYSA)						Entireleaf morningglory (IPOHG)	
			6/5	6/16	6/25	7/2	7/16	7/23	6/5	6/16
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	0
Imazethapyr	0.063	PPI	91	85	90	100	100	100	89	73
Imazethapyr	0.094	PPI	94	93	95	100	100	100	93	84
Imazethapyr	0.125	PPI	95	95	94	100	100	100	90	80
Imazethapyr	0.063	PRE	75	73	79	95	100	100	78	60
Imazethapyr	0.094	PRE	86	88	89	100	100	100	83	64
Imazethapyr	0.125	PRE	86	89	93	100	100	100	84	80
Imazethapyr	0.063	DPRE	81	86	95	100	100	100	86	83
Imazethapyr	0.094	DPRE	76	88	95	100	100	100	81	78
Imazethapyr	0.125	DPRE	83	90	95	100	100	99	88	78
Imazethapyr + pendimethalin	0.063 1.0	DPRE	84	89	95	100	100	100	91	80
Imazethapyr + pendimethalin	0.094 1.0	DPRE	80	86	95	100	100	100	88	83
Imazethapyr + pendimethalin	0.125 1.0	DPRE	83	90	95	100	100	100	83	85
Imazethapyr + Activator 90 (0.25%)	0.063	EPOST	0	50	90	100	100	100	0	58
Imazethapyr + Activator 90 (0.25%)	0.094	EPOST	0	53	91	100	100	100	0	58
Imazethapyr + Activator 90 (0.25%)	0.125	EPOST	0	50	91	100	100	100	0	65
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PPI EPOST	94	94	95	100	100	100	90	83
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PRE EPOST	76	89	95	100	100	100	85	79

continued

Table 34. Continued.

Herbicide	Rate	Application timing	Weed control							
			Red rice (ORYSA)						Entireleaf morningglory (IPOHG)	
			6/5	6/16	6/25	7/2	7/16	7/23	6/5	6/16
	(lb/A)		(%)							
Imazethapyr fb	0.063	DPRE								
imazethapyr +	0.063									
Activator 90 (0.25%)		EPOST	79	85	95	100	100	100	91	71
Pendimethalin +	1.0									
imazethapyr fb	0.063	DPRE								
imazethapyr +	0.063									
Activator 90 (0.25%)		EPOST	81	89	95	100	100	100	81	80
Imazaquin	0.125	PPI	91	78	80	100	100	100	90	79
Imazaquin +	0.063									
imazethapyr	0.063	PPI	95	91	94	100	100	100	84	80
Imazaquin fb	0.125	PPI								
imazethapyr +	0.063									
Activator 90 (0.25%)		EPOST	94	91	95	100	100	100	89	84
Imazethapyr fb	0.063	PPI								
imazaquin +	0.125									
Activator 90 (0.25%)		EPOST	94	94	95	100	100	100	83	74
Propanil (Super Wham) +	3.0									
imazethapyr +	0.063									
Penetrator Plus (1 pt/A)		EPOST	0	58	91	100	100	100	0	53
Imazethapyr +	0.063									
Activator 90 (0.25%) fb		EPOST								
imazethapyr +	0.063									
Activator 90 (0.25%)		PREFL	0	55	91	100	100	100	0	53
Imazethapyr +	0.063									
Activator 90 (0.25%) fb		EPOST								
imazethapyr +	0.063									
Activator 90 (0.25%)		POFL	0	45	79	100	96	100	0	40
Imazethapyr +	0.125									
Activator 90 (0.25%)		POFL	0	0	0	35	64	28	0	0

continued

Table 34. Continued.

Herbicide	Rate	Application timing	Weed control: Red rice (ORYSA) 6/5	6/16	6/25	7/2	7/16	7/23	Entireleaf morningglory (IPOHG) 6/5	6/16
	(lb/A)		(%)							
Pendimethalin + quinclorac fb imazethapyr + Activator 90 (0.25%)	1.0 0.188 0.063	DPRE EPOST	0	48	91	100	100	100	0	85
Pendimethalin + quinclorac fb propanil (Super Wham) + triclopyr + Penetrator Plus (1 pt/A)	1.0 0.188 3.0 0.25	DPRE PREFL	0	0	0	0	0	0	0	88
LSD (0.05)			5	7	3	5	2	11	9	13

continued

Table 34. Continued.

Herbicide	Rate	Application timing	Rice injury 6/5	6/16	6/25	7/2	7/16	7/23	Rice heads formed 7/23
	(lb/A)		(%)						
Untreated check			0	0	0	0	0	0	40
Imazethapyr	0.063	PPI	3	0	0	0	0	0	98
Imazethapyr	0.094	PPI	11	5	0	0	0	0	93
Imazethapyr	0.125	PPI	28	13	23	5	5	0	75
Imazethapyr	0.063	PRE	0	5	0	0	0	0	100
Imazethapyr	0.094	PRE	9	3	8	0	0	0	100
Imazethapyr	0.125	PRE	15	6	13	0	0	0	95
Imazethapyr	0.063	DPRE	41	18	20	4	4	0	63
Imazethapyr	0.094	DPRE	55	26	28	18	15	6	21

continued

Table 34. Continued.

Herbicide	Rate	Application timing	Rice injury 6/5	6/16	6/25	7/2	7/16	7/23	Rice heads formed 7/23
	(lb/A)		(%)						
Imazethapyr	0.125	DPRE	63	45	38	24	19	1	10
Imazethapyr + pendimethalin	0.063 1.0	DPRE	61	25	31	21	20	10	26
Imazethapyr + pendimethalin	0.094 1.0	DPRE	33	16	21	5	13	3	75
Imazethapyr + pendimethalin	0.125 1.0	DPRE	64	34	31	23	19	6	16
Imazethapyr + Activator 90 (0.25%)	0.063	EPOST	0	8	0	0	0	0	96
Imazethapyr + Activator 90 (0.25%)	0.094	EPOST	0	26	14	5	3	1	68
Imazethapyr + Activator 90 (0.25%)	0.125	EPOST	0	25	15	4	0	0	98
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PPI EPOST	3	18	11	1	0	1	94
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	PRE EPOST	0	8	0	0	0	0	99
Imazethapyr fb imazethapyr + Activator 90 (0.25%)	0.063 0.063	DPRE EPOST	18	23	14	8	3	1	81
Pendimethalin + imazethapyr fb imazethapyr + Activator 90 (0.25%)	1.0 0.063 0.063	DPRE EPOST	51	34	26	23	20	6	64
Imazaquin	0.125	PPI	5	3	0	0	0	0	95
Imazaquin + imazethapyr	0.063 0.063	PPI	11	0	0	0	0	0	89

continued

Table 34. Continued.

Herbicide	Rate	Application timing	Rice injury 6/5	6/16	6/25	7/2	7/16	7/23	Rice heads formed 7/23
	(lb/A)		(%)						
Imazaquin fb	0.125	PPI							
imazethapyr +	0.063								
Activator 90 (0.25%)		EPOST	0	11	10	0	0	0	99
Imazethapyr fb	0.063	PPI							
imazaquin +	0.125								
Activator 90 (0.25%)		EPOST	3	10	15	8	0	0	95
Propanil (Super Wham) +	3.0								
imazethapyr +	0.063								
Penetrator Plus (1 pt/A)		EPOST	0	33	11	3	5	1	84
Imazethapyr +	0.063								
Activator 90 (0.25%) fb		EPOST							
imazethapyr +	0.063								
Activator 90 (0.25%)		PREFL	0	13	23	20	20	1	73
Imazethapyr +	0.063								
Activator 90 (0.25%) fb		EPOST							
imazethapyr +	0.063								
Activator 90 (0.25%)		POFL	0	0	3	8	20	1	46
Imazethapyr +	0.125								
Activator 90 (0.25%)		POFL	0	0	0	0	36	25	5
Pendimethalin +	1.0								
quinclorac fb	0.188	DPRE							
imazethapyr +	0.063								
Activator 90 (0.25%)		EPOST	0	5	8	3	5	0	88
Pendimethalin +	1.0								
quinclorac fb	0.188	DPRE							
propanil (Super Wham)	3.0								
+ triclopyr +	0.25								
Penetrator Plus (1 pt/A)		PREFL	0	0	0	0	0	0	14
LSD (0.05)			11	9	6	8	6	6	26

Table 35. Fenoxaprop safener, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 18, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: HOE-122006 is the fenoxaprop safener. 2-LF = 2-leaf rice; PREFL = preflood.

Application type	2-LF	PREFL
Date applied	May 30, 1997	June 17, 1997
Time	11:36 am	4:00 pm
Incorporation equipment	N/A	N/A
Air / Soil temperature (F)	68 / 72	89 / 82
Relative humidity (%)	75	56
Wind (mph, direction)	3	3
Weather	cloudy	partly cloudy
Soil moisture	damp	damp
Crop stage / Height	2-lf / 3"	4 tiller / 12"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	22 / 6 / 20	24 / 6 / 20
Gpa / Psi	10 / 28	10 / 22 & 26
Weed species	– – – – – – (height / # leaves) – – – – – –	
BRAPP (10 to 47 / ft^2)	2-lf / 1"	4-lf / 4"

Conclusions: This study was oversprayed with 1 gallon / A of Hi-Dep instead of 1 quart / A on July 7, so ratings after that and rice yields may not accurately reflect results of fenoxaprop treatments.

Table 35.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control				Rice injury							yield
			6/9	6/18	7/23	8/20	6/9	6/18	7/3	7/10	7/23	8/20	8/27	
	(lb/A)		– – – – – – – – – – – – – – – –				(%) –							(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	0	2655
Fenoxaprop (Bugle)	0.057	2-LF	83	65	100	100	0	0	8	9	24	3	5	5670
Fenoxaprop (Bugle)	0.114	2-LF	86	70	100	100	0	0	16	16	35	19	25	4230
Fenoxaprop (Bugle) +	0.057													
HOE-1122006	0.057	2-LF	81	66	100	100	0	0	3	6	28	8	14	5535
Fenoxaprop (Bugle) +	0.114													
HOE-122006	0.114	2-LF	84	68	100	100	0	0	3	4	21	6	10	5490
Fenoxaprop (Whip 360)	0.057	2-LF	86	70	100	100	0	3	44	9	41	23	38	2745
Fenoxaprop (Whip 360)	0.114	2-LF	83	70	100	100	0	18	33	33	40	25	43	3915
Fenoxaprop (Whip 360) +	0.057													
HOE-122006	0.057	2-LF	80	70	100	100	0	0	3	5	21	4	14	5895
Fenoxaprop (Whip 360) +	0.114													
HOE-122006	0.114	2-LF	89	66	100	100	0	0	3	5	19	4	10	5895
Fenoxaprop (Bugle) +	0.04													
HOE-122006 fb	0.04	2-LF												
bentazon +	0.75													
fenoxaprop (Bugle) +	0.057													
HOE-122006	0.057	PREFL	86	66	100	100	0	0	10	6	15	4	8	6165
Propanil (Super Wham) +	3.0													
Penetrator Plus (1 pt/A)		2-LF												
fbpropanil (Super														
Wham) +	3.0													
Penetrator Plus (1 pt/A)		PREFL	100	95	100	100	0	0	8	6	21	9	10	3780
Propanil (Super Wham) +	3.0													
quinclorac +	0.25													
Penetrator Plus (1 pt/A)		2-LF	100	100	100	100	0	0	14	9	16	6	8	6255
Fenoxaprop (Bugle) fb	0.04	2-LF												
fenoxaprop (Bugle)	0.057	PREFL	80	68	100	100	0	0	18	18	33	20	33	3780

continued

Table 35. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control 6/9	6/18	7/23	8/20	Rice injury 6/9	6/18	7/3	7/10	7/23	8/20	8/27	yield
	(lb/A)		– – – – – – – – – – – – – – – –				(%) –							(lb/A)
Fenoxaprop (Bugle) + HOE-122006 fb fenoxaprop (Bugle) + HOE-122006	0.04 0.04 0.057 0.057	2-LF PREFL	78	68	100	100	0	0	11	11	24	5	11	5940
LSD (0.05)			9	8	1	1	NS	5	12	11	17	13	18	1440

Table 36. Quinclorac (Facet) granules, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.0 / 4.9

Planting date ..... May 7, 1997
Harvest date ..... September 19, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: Quinclorac (Facet) granules (G) were mixed with 3 lb of sand and hand-spread in plots. PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; POFL = postflood; DF = dry flowable formulation.

Application type	PRE	DPRE	EPOST	POFL
Date applied	May 7, 1997	May 12, 1997	May 30, 1997	June 27, 1997
Time	3:15 pm	3:30 pm	6:15 pm	10:00 am
Incorporation equipment	N/A	N/A	N/A	N/A
Air/Soil temperature (F)	78 / 70	60 / 62	80 / 80	86 / 80
Relative humidity (%)	44	66	38	63
Wind (mph, direction)	3	4	5	0
Weather	mostly cloudy	cloudy	clear	clear
Soil moisture	moist	moist	damp	wet
Crop stage/Height	N/A	N/A	2-lf / 3"	4-5 tiller / 8"
Sprayer type/mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type/Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	24 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 23	10 / 24	10 / 26	10 / 22
Weed species (population):	– – – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – –			
BRAPP (20 to 38/ft^2)	N/A	N/A	2-lf / 1-2"	17"

Conclusions: This study was a continuation of research to compare Facet DF with the Facet 1.5% granular formulation. In all soil-applied treatments, performance of the two formulations was comparable. The granular formulation was less effective early postemergence, which is consistent with previous results. Both formulations provided poor control applied postflood.

Table 36.

Herbicide	Rate	Application timing	Weed control									
			Broadleaf signalgrass (BRAPP)								Pennsylvania smartweed (POLPY)	
			5/22	5/30	6/9	6/17	6/27	7/22	8/21	8/27	8/21	8/27
	(lb/A)		(%)									
Untreated check			0	0	0	0	0	0	0	0	0	0
Quinclorac (DF)	0.25	PRE	100	90	98	99	98	100	100	98	0	0
Quinclorac (1.5G)	0.25	PRE	90	84	86	96	100	100	100	99	0	0
Quinclorac (DF)	0.375	PRE	100	90	94	100	100	100	100	100	14	18
Quinclorac (1.5G)	0.375	PRE	93	85	94	98	93	100	100	100	20	20
Quinclorac (DF)	0.5	PRE	98	90	99	100	99	100	100	100	69	71
Quinclorac (1.5G)	0.5	PRE	98	89	98	100	98	100	100	100	80	75
Quinclorac (DF)	0.25	DPRE	95	90	98	98	100	100	100	100	74	76
Quinclorac (1.5G)	0.25	DPRE	86	84	94	100	98	100	100	100	68	55
Quinclorac (DF)	0.375	DPRE	95	90	98	100	100	100	100	100	80	83
Quinclorac (1.5G)	0.375	DPRE	91	89	94	100	98	100	100	100	78	73
Quinclorac (DF)	0.5	DPRE	93	90	99	100	100	100	100	100	79	79
Quinclorac (1.5G)	0.5	DPRE	78	88	95	100	100	100	100	98	71	73
Quinclorac (DF) +	0.25											
Agri-Dex (1 pt/A)		EPOST	0	0	91	99	100	100	100	100	40	33
Quinclorac (1.5G)	0.25	EPOST	0	0	65	88	90	87	90	50	22	0
Quinclorac (DF) +	0.375											
Agri-Dex (1 pt/A)		EPOST	0	0	86	100	100	100	100	100	63	45
Quinclorac (1.5G)	0.375	EPOST	0	0	47	77	70	90	90	80	0	0
Quinclorac (DF) +	0.5											
Agri-Dex (1 pt/A)		EPOST	0	0	95	98	98	100	100	100	83	79
Quinclorac (1.5G)	0.5	EPOST	0	0	54	86	100	95	98	90	65	58
Quinclorac (DF) +	0.375											
Agri-Dex (1 pt/A)		POFL	0	0	0	0	0	68	84	75	65	53
Quinclorac (1.5G)	0.375	POFL	0	0	0	0	0	0	45	35	0	0
Quinclorac (DF) +	0.5											
Agri-Dex (1 pt/A)		POFL	0	0	0	0	48	95	93	63	0	0
Quinclorac (1.5G)	0.5	POFL	0	0	0	0	60	85	87	77	50	43
Quinclorac (DF) +	0.25											
thiobencarb	2.0	DPRE	99	90	99	100	100	100	100	95	0	0

continued

Table 36. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 5/22	5/30	6/9	6/17	6/27	7/22	8/21	8/27	Pennsylvania smartweed (POLPY) 8/21	8/27
	(lb/A)		(%)									
Quinclorac (DF) + thiobencarb	0.188 2.0	DPRE	98	86	96	100	98	100	100	100	70	68
Quinclorac (DF) + pendimethalin	0.25 1.0	DPRE	100	90	99	100	98	100	100	100	93	85
Quinclorac (DF) + pendimethalin	0.188 1.0	DPRE	98	90	100	100	100	100	100	100	70	65
Quinclorac (DF) + thiobencarb	0.375 2.0	DPRE	99	90	100	100	100	100	100	100	70	60
Quinclorac (DF) + thiobencarb	0.375 3.0	DPRE	98	90	100	98	100	100	100	100	63	60
Quinclorac (DF) + pendimethalin	0.375 1.0	DPRE	100	90	100	99	100	100	100	100	89	83
LSD (0.05)			8	3	11	7	9	9	10	15	26	26

continued

Table 36. Continued.

Herbicide	Rate	Application timing	Rice injury 5/22	5/30	6/9	6/17	6/27	7/22	8/21	Rice yield
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	4185
Quinclorac (DF)	0.25	PRE	3	10	0	8	4	0	0	6615
Quinclorac (1.5G)	0.25	PRE	0	10	1	4	0	0	0	6300
Quinclorac (DF)	0.375	PRE	8	10	0	24	5	0	0	6480
Quinclorac (1.5G)	0.375	PRE	5	10	0	15	5	0	0	6525
Quinclorac (DF)	0.5	PRE	15	13	0	8	4	0	3	6435
Quinclorac (1.5G)	0.5	PRE	15	13	1	15	11	0	0	6120

continued

Table 36. Continued.

Herbicide	Rate	Application timing	Rice injury 5/22	5/30	6/9	6/17	6/27	7/22	8/21	Rice yield
	(lb/A)		– – – – – – – – – – – – – – (%) – – – – – – – – – – – – – –							
Quinclorac (DF)	0.25	DPRE	0	10	0	1	0	0	0	6480
Quinclorac (1.5G)	0.25	DPRE	10	10	0	5	1	0	0	6660
Quinclorac (DF)	0.375	DPRE	0	11	3	4	3	0	0	6345
Quinclorac (1.5G)	0.375	DPRE	5	11	1	9	0	0	0	6210
Quinclorac (DF)	0.5	DPRE	8	10	0	8	0	0	0	6795
Quinclorac (1.5G)	0.5	DPRE	8	11	0	15	5	0	3	6870
Quinclorac (DF) +	0.25									
Agri-Dex (1 pt/A)		EPOST	0	0	0	1	3	0	0	6480
Quinclorac (1.5G)	0.25	EPOST	0	0	0	0	0	0	0	5940
Quinclorac (DF) +	0.375									
Agri-Dex (1 pt/A)		EPOST	0	0	0	0	1	0	0	6075
Quinclorac (1.5G)	0.375	EPOST	0	0	0	0	5	0	3	5535
Quinclorac (DF) +	0.5									
Agri-Dex (1 pt/A)		EPOST	0	0	0	0	3	0	0	6120
Quinclorac (1.5G)	0.5	EPOST	0	0	0	3	5	0	3	5625
Quinclorac (DF) +	0.375									
Agri-Dex (1 pt/A)		POFL	0	0	0	0	0	0	0	4905
Quinclorac (1.5G)	0.375	POFL	0	0	0	0	0	0	0	4140
Quinclorac (DF) +	0.5									
Agri-Dex (1 pt/A)		POFL	0	0	0	0	0	0	0	5445
Quinclorac (1.5G)	0.5	POFL	0	0	0	0	0	0	0	5715
Quinclorac (DF) +	0.25									
thiobencarb	2.0	DPRE	5	10	0	5	0	0	0	6075
Quinclorac (DF) +	0.188									
thiobencarb	2.0	DPRE	3	10	0	0	1	0	0	6390
Quinclorac (DF) +	0.25									
pendimethalin	1.0	DPRE	10	10	1	8	4	0	0	6210
Quinclorac (DF) +	0.188									
pendimethalin	1.0	DPRE	5	11	0	9	4	0	0	5985
Quinclorac (DF) +	0.375									
thiobencarb	2.0	DPRE	0	10	0	15	0	0	0	6615

continued

Table 36. Continued.

Herbicide	Rate	Application timing	Rice injury 5/22	5/30	6/9	6/17	6/27	7/22	8/21	Rice yield
	(lb/A)		– – – – – – – – – – – – – – (%) – – – – – – – – – – – – – –							
Quinclorac (DF) + thiobencarb	0.375 3.0	DPRE	5	10	1	1	0	0	0	5895
Quinclorac (DF) + pendimethalin	0.375 1.0	DPRE	13	10	1	8	0	0	0	6480
LSD (0.05)			10	2	NS	9	NS	NS	NS	1017

Table 37. Halosulfuron (Permit) in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 22, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: PRE = preemergence; DPRE = delayed preemergence; EPOST = early postemergence; PREFL1 = preflood; PREFL2 = preflood 24 hrs following PREFL1; POFL = postflood.

Application type	PRE	DPRE	EPOST	PREFL1	PREFL2	POFL
Date applied	May 7, 1997	May 12, 1997	May 29, 1997	June 17, 1997	June 18, 1997	June 27, 1997
Time	3:40 pm	3:00 pm	6:30 pm	1:30 pm	11:00 am	1:45 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	78 / 70	60 / 62	80 / 80	81 / 78	78 / 72	89 / 80
Relative humidity (%)	44	66	40	63	65	53
Wind (mph, direction)	3	4	5	4	0	0
Weather	mostly cloudy	cloudy	clear	partly cloudy	clear	clear
Soil moisture	moist	moist	moist	soggy	wet	wet
Crop stage / Height	N/A	N/A	2-3 lf / 3"	5 lf / 6"	4-5 tiller / 7.5"	16"
Sprayer type / mph	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	18 / 6 / 20	20 / 6 / 20	20 / 6 / 20	22 / 6 / 20	18 / 6 / 20
Gpa / Psi	10 / 23	10 / 24	10 / 26	10 / 24	10 / 23	10 / 22
Weed species (population):	– – – – – – – – – – – – – – – – – – – –			(height / # leaves)	– – – – – – – – – – – –	
BRAPP (1 / ft²)	N/A	N/A	N/A	2-3 lf / <1"	4 lf / 3"	2 lf / 1"
CYPES (1 / ft²)	N/A	N/A	N/A	5-8 lf / 5-12"	N/A	N/A

Conclusions: Halosulfuron (Permit) continues to show promise for yellow nutsedge control in rice. This study was designed to look at effects halosulfuron had on rice yields. The study was maintained weed-free after June 17 so crop injury and yield would be the only variables. No adverse effects on yield occurred with any treatment.

Table 37.

			Weed control			Rice injury						
			Broadleaf signalgrass (BRAPP)		Yellow nutsedge (CYPES)							Rice
Herbicide	Rate	Application timing	5/22	6/17	6/17	5/22	6/17	6/27	7/22	8/21	9/17	yield
	(lb/A)		– – – – – – – – – – – – – – –			(%) –						(lb/A)
All treatments included quinclorac, 0.25 + pendimethalin, 1.0, DPRE fb propanil, 4.0, PREFL2:												
Check (DPRE, PRFL)			93	91	93	0	3	3	0	5	1	6795
Halosulfuron	0.062	PRE	99	91	98	3	4	3	3	4	4	6525
Halosulfuron	0.124	PRE	96	96	99	0	10	3	0	5	5	6615
Halosulfuron +	0.062											
Induce (0.25%)		EPOST	91	94	98	0	8	6	0	5	4	7155
Halosulfuron +	0.124											
Induce (0.25%)		EPOST	94	96	100	0	3	4	0	3	4	6660
Halosulfuron +	0.062											
Induce (0.25%)		PREFL1	90	94	84	0	3	15	1	4	6	6930
Halosulfuron +	0.124											
Induce (0.25%)		PREFL1	94	90	54	0	0	5	0	0	1	6525
Halosulfuron +	0.062											
Induce (0.25%)		POFL	99	91	55	0	5	5	0	5	5	7200
Halosulfuron +	0.124											
Induce (0.25%)		POFL	85	95	88	0	0	5	0	5	3	6795
Halosulfuron +	0.062											
Induce (0.25%) fb		EPOST										
halosulfuron +	0.047											
Induce (0.25%)		PREFL1	89	99	100	0	6	11	4	9	10	6570
Halosulfuron +	0.062											
Induce (0.25%) fb		EPOST										
halosulfuron +	0.062											
Induce (0.25%)		POFL	89	96	100	0	6	5	3	4	6	6930

continued

Table 37. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 5/22	Weed control: Broadleaf signalgrass (BRAPP) 6/17	Weed control: Yellow nutsedge (CYPES) 6/17	Rice injury 5/22	Rice injury 6/17	Rice injury 6/27	Rice injury 7/22	Rice injury 8/21	Rice injury 9/17	Rice yield
	(lb/A)		– – – – – – – – – – – – – – –			(%) –						(lb/A)
Halosulfuron +	0.062											
Induce (0.25%) fb		PREFL1										
halosulfuron +	0.047											
Induce (0.25%)		POFL	96	91	75	0	1	6	0	3	3	7020
LSD (0.05)			NS	NS	34	NS	NS	NS	NS	NS	NS	NS

Table 38. Annual grass control in rice with V-10029 programs, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 28, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: 2-3 LF = 2-3 leaf grasses; 4-5 LF = 4-5 leaf grasses; 2-TILL = 2-tiller grasses; 4-TILL = 4-tiller grasses.

Application type	2-3 LF	4-5 LF	2-TILL	4-TILL
Date applied	May 29, 1997	June 4, 1997	June 11, 1997	June 17, 1997
Time	7:35 pm	10:15 am	1:55 pm	3:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	74 / 68	69 / 62	89 / 62	85 / 78
Relative humidity (%)	60	73	63	42
Wind (mph, direction)	2	3.5	3	4
Weather	clear	cloudy	cloudy	partly cloudy
Soil moisture	damp	damp	soggy	soggy Crop
stage / Height	1-2 lf / 2"	4 lf / 5"	4 lf / 5"	4-5 lf / 6"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	22 / 6 / 20	22 / 6 / 20	22 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 25	10 / 26	10 / 19	10 / 24
Weed species (population):	– – – – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – – – –			
BRAPP (10 to 20 / ft^2)	2 lf / 1"	3 lf / 3"	3 lf / 3"	4 lf / 4"
POLPY (10 / ft^2 to <1 / ft^2 by June 4)	N/A	4-8 lf / 5"	7 lf / 5"	6 lf / 5"
SEBEX (<1 / ft^2)	N/A	N/A	2 lf / 3"	3 lf / 4"
ECLAL (5 / ft^2)	N/A	N/A	2 lf / 1"	N/A

Conclusions: V-10029 provided excellent control of barnyardgrass in other research at the University of Arkansas. However, it consistently failed to control broadleaf signalgrass at this location.

Table 38.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/9	6/17	7/3	7/22	8/20	9/8	Hemp sesbania (SEBEX) 6/9	7/22	8/20	9/8	Penn. smartweed (POLPY) 7/22	8/20	9/8
	(lb/A)		(%)												
Untreated check			0	0	0	0	0	0	0	0	0	0	0	0	0
V-10029 +	0.02														
Kinetic (0.25%)		2-3 LF	0	18	0	11	20	13	0	75	88	75	73	100	95
V-10029 +	0.013														
Kinetic (0.25%)		2-3 LF	0	0	0	5	0	13	0	80	95	95	38	100	98
V-10029 +	0.009														
Kinetic (0.25%)		2-3 LF	0	5	0	10	14	13	0	48	38	75	50	88	81
(Propanil + molinate)	4.5	2-3 LF	96	63	100	85	80	69	100	95	85	98	88	100	100
V-10029 +	0.02														
Kinetic (0.25%)		4-5 LF	0	30	100	60	60	53	0	100	100	100	100	100	100
V-10029 +	0.013														
Kinetic (0.25%)		4-5 LF	0	23	25	41	29	100	0	100	98	100	83	100	100
V-10029 +	0.009														
Kinetic (0.25%)		4-5 LF	0	0	25	19	23	5	0	100	100	100	88	100	100
(Propanil + molinate)	6.0	4-5 LF	100	95	100	100	100	99	100	100	100	100	100	100	100
V-10029 +	0.02														
Kinetic (0.25%)		2-TILL	0	0	0	5	9	10	0	100	100	100	0	100	100
V-10029 +	0.013														
Kinetic (0.25%)		2-TILL	0	0	10	15	13	13	0	100	100	100	0	100	100
V-10029 +	0.009														
Kinetic (0.25%)		2-TILL	0	0	13	0	9	5	0	100	100	100	0	100	100
(Propanil + molinate)	6.0	2-TILL	0	73	100	99	98	91	0	100	100	100	100	100	100
V-10029 +	0.02														
Kinetic (0.25%)		4-TILL	0	0	0	0	10	0	0	100	100	100	0	85	95
V-10029 +	0.013														
Kinetic (0.25%)		4-TILL	0	0	13	9	10	0	0	88	75	100	0	30	59
V-10029 +	0.009														
Kinetic (0.25%)		4-TILL	0	0	0	0	0	0	0	100	100	100	0	13	0
(Propanil + molinate)	6.0	4-TILL	0	8	100	93	85	55	0	100	100	100	0	85	68
LSD (0.05)			1	15	18	18	15	23	1	31	27	25	27	21	24

continued

Table 38. Continued.

Herbicide	Rate	Application timing	Weed control: Morningglory (IPOSS) 6/9	Weed control: Sicklepod (SENOB) 6/9	Weed control: Eclipta (ECLAL) 6/17	Rice injury 6/9	Rice injury 6/17	Rice injury 7/3	Rice injury 7/22	Rice injury 8/20	Rice injury 9/8	Rice yield
	(lb/A)		(%)			(%)						(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	2250
V-10029 +	0.02											
Kinetic (0.25%)		2-3 LF	95	0	0	0	0	0	0	0	0	2925
V-10029 +	0.013											
Kinetic (0.25%)		2-3 LF	75	0	0	0	0	0	0	0	0	2340
V-10029 +	0.009											
Kinetic (0.25%)		2-3 LF	25	0	0	0	0	0	0	0	0	3105
(Propanil + molinate)	4.5	2-3 LF	100	100	100	0	0	0	0	0	0	5175
V-10029 +	0.02											
Kinetic (0.25%)		4-5 LF	100	0	0	0	1	0	0	0	0	5670
V-10029 +	0.013											
Kinetic (0.25%)		4-5 LF	100	0	0	0	0	0	0	0	0	4005
V-10029 +	0.009											
Kinetic (0.25%)		4-5 LF	100	0	0	0	0	0	0	0	0	3015
(Propanil + molinate)	6.0	4-5 LF	100	100	100	0	1	0	0	0	0	5940
V-10029 +	0.02											
Kinetic (0.25%)		2-TILL	100	0	0	0	0	0	0	0	0	3375
V-10029 +	0.013											
Kinetic (0.25%)		2-TILL	100	0	0	0	0	0	0	0	0	2790
V-10029 +	0.009											
Kinetic (0.25%)		2-TILL	100	0	0	0	0	0	0	0	0	4050
(Propanil + molinate)	6.0	2-TILL	100	0	0	0	6	0	0	0	0	4500
V-10029 +	0.02											
Kinetic (0.25%)		4-TILL	100	0	0	0	0	0	0	5	0	2655
V-10029 +	0.013											
Kinetic (0.25%)		4-TILL	70	0	0	0	0	0	0	0	0	2025
V-10029 +	0.009											
Kinetic (0.25%)		4-TILL	50	0	0	0	0	0	0	0	0	3060
(Propanil + molinate)	6.0	4-TILL	75	0	0	0	0	0	0	0	0	5085
LSD (0.05)			40	0	0	NS	NS	NS	NS	NS	NS	1332

Table 39. Broadleaf and grass control in rice with V-10029 programs, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: DPRE = delayed preemergence; 2-3 LF = 2-3 leaf grasses; 4-5 LF = 4-5 leaf grasses; PREFL = 3 days preflood; POFL = postflood; LPOFL = late postflood.

Application type	DPRE	2-3 LF	4-5 LF	PREFL	POFL	LPOFL
Date applied	May 12, 1997	May 29, 1997	June 4, 1997	June 16, 1997	June 27, 1997	July 7, 1997
Time	5:00 pm	7:35 pm	8:45 am	4:00 pm	1:00 pm	1:00 pm
Incorporation equipment	N/A	N/A	N/A	N/A	N/A	N/A
Air / Soil temperature (F)	60 / 62	74 / 68	72 / 62	80 / 67	87 / 80	87 / 78
Relative humidity (%)	66	60	73	66	63	47
Wind (mph, direction)	4	2	3	3	3	3
Weather	cloudy	clear	cloudy	partly cloudy	clear	mostly clear
Soil moisture	moist	damp	damp	damp	wet	wet
Crop stage / Height	N/A	1-2 lf / 2"	3-4 lf / 4"	5 lf / 6"	4-5 tiller / 6"	5 tiller / 9"
Sprayer type / mph	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3	BkPkCO$_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	22 / 6 / 20	22 / 6 / 20	26 / 6 / 20	26 / 6 / 20	28 / 6 / 20
Gpa / Psi	10 / 24	10 / 26	10 / 24	10 / 22	10 / 22	10 / 24
Weed species (populations):	– – – – – – – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – – – – – – –					
BRAPP (60 / ft^2 mid-June; 30 / ft^2 July)	N/A	2 lf / 0.5"	2 lf / 2"	4 lf / 4"	/ 8"	/ 12"
SEBEX (1 / ft^2)	N/A	2 lf / 1"	2 lf / 2"	4 lf / 4"	/ 8-10"	/ 24"
SENOB (1-2 / ft^2)	N/A	coty. / 0.5"	2 lf / 2"	4 lf / 3"	N/A	N/A
IPOSS (1-3 / ft^2)	N/A	coty. / 0.5"	1 lf / 2"	4 lf / 3-4"	/ 18"	N/A

Conclusions: V-10029 provided excellent control of barnyardgrass in other research at the University of Arkansas. However, it consistently failed to control broadleaf signalgrass at this location.

Table 39.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control						
			6/2	6/9	6/17	7/3	7/23	8/20	9/8
	(lb/A)		(%)						
Untreated check			0	0	0	0	0	0	0
V-10029 +	0.02								
Kinetic (0.25%)		PREFL	0	0	0	53	10	33	54
(Propanil + molinate)	6.0	PREFL	0	0	0	93	89	83	74
V-10029 +	0.02								
Kinetic (0.25%) fb		4-5 LF							
triclopyr +	0.28								
Kinetic (0.25%)		LPOFL	0	38	30	94	90	95	85
(Propanil + molinate) fb	4.5	4-5 LF							
triclopyr +	0.28								
Kinetic (0.25%)		LPOFL	0	100	98	100	100	100	100
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
Kinetic (0.25%)		4-5 LF	0	94	88	99	99	99	99
Pendimethalin fb	1.0	DPRE							
propanil	4.0	4-5 LF	0	100	100	100	100	100	100
Thiobencarb fb	3.0	DPRE							
V-10029 +	0.02								
Kinetic (0.25%)		4-5 LF	0	44	50	99	83	95	95
Thiobencarb fb	3.0	DPRE							
(propanil + molinate)	4.5	4-5 LF	0	99	96	100	99	99	99
Thiobencarb +	2.0								
propanil fb	3.0	2-3 LF							
V-10029 +	0.02								
thiobencarb +	2.0								
Kinetic (0.25%)		4-5 LF	91	100	100	100	100	100	100

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control						
			6/2	6/9	6/17	7/3	7/23	8/20	9/8
	(lb/A)		(%)						
Thiobencarb +	2.0								
propanil fb	3.0	2-3 LF							
thiobencarb +	2.0								
propanil	3.0	4-5 LF	95	100	100	100	100	100	100
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
bensulfuron +	0.06								
Kinetic (0.25%)		4-5 LF	0	91	80	99	94	95	96
Pendimethalin fb	1.0	DPRE							
propanil +	3.0								
bensulfuron	0.06	4-5 LF	0	99	99	100	100	100	100
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
bensulfuron +	0.06								
Kinetic (0.25%)		POFL	0	58	15	18	25	10	43
Pendimethalin fb	1.0	DPRE							
bensulfuron +	0.06								
Kinetic (0.25%)		POFL	0	60	44	46	26	13	50
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
Kinetic (0.25%)		POFL	0	56	41	50	33	21	53
Pendimethalin fb	1.0								
molinate	4.0	POFL	0	43	13	15	5	10	25
Pendimethalin fb	1.0	DPRE							
V-10029 +	0.02								
triclopyr +	0.28								
Kinetic (0.25%)		LPOFL	0	65	39	15	5	8	35
Pendimethalin fb	1.0								
molinate fb	4.0	POFL							
triclopyr +	0.28								
Kinetic (0.25%)		LPOFL	0	25	5	15	14	10	38

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control 6/2	6/9	6/17	7/3	7/23	8/20	9/8
	(lb/A)		(%)						
V-10029 +	0.02								
F8426-2 +	0.02								
Kinetic (0.25%)		4-5 LF	0	30	84	98	99	96	93
LSD (0.05)			3	13	14	15	11	13	20

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/9	7/23	8/20	9/8	Morningglory sp. (IPOSS) 6/2	6/9	6/17	Sicklepod (SENOB) 6/2	6/9	6/17
	(lb/A)		(%)									
Untreated check			0	0	0	0	0	0	0	0	0	0
V-10029 +	0.02											
Kinetic (0.25%)		PREFL	0	100	100	100	0	0	0	0	0	0
(Propanil + molinate)	6.0	PREFL	0	100	100	100	0	0	0	0	0	0
V-10029 +	0.02											
Kinetic (0.25%) fb		4-5 LF										
triclopyr +	0.28											
Kinetic (0.25%)		LPOFL	0	100	100	100	0	0	89	0	5	55
(Propanil + molinate) fb	4.5	4-5 LF										
triclopyr +	0.28											
Kinetic (0.25%)		LPOFL	100	100	100	100	0	100	93	0	100	100
Pendimethalin fb	1.0	DPRE										
V-10029 +	0.02											
Kinetic (0.25%)		4-5 LF	0	100	96	95	0	0	90	0	0	80
Pendimethalin fb	1.0	DPRE										
propanil	4.0	4-5 LF	100	95	95	96	0	100	94	0	100	100

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/9	7/23	8/20	9/8	Morningglory sp. (IPOSS) 6/2	6/9	6/17	Sicklepod (SENOB) 6/2	6/9	6/17
	(lb/A)		(%)									
Thiobencarb fb	3.0	DPRE										
V-10029 +	0.02											
Kinetic (0.25%)		4-5 LF	0	93	93	95	0	0	90	0	3	88
Thiobencarb fb	3.0	DPRE										
(propanil + molinate)	4.5	4-5 LF	100	100	100	99	0	98	70	0	100	100
Thiobencarb +	2.0											
propanil fb	3.0	2-3 LF										
V-10029 +	0.02											
thiobencarb +	2.0											
Kinetic (0.25%)		4-5 LF	100	100	100	100	69	100	100	99	100	100
Thiobencarb +	2.0											
propanil fb	3.0	2-3 LF										
thiobencarb +	2.0											
propanil	3.0	4-5 LF	100	100	100	100	75	100	100	100	100	100
Pendimethalin fb	1.0	DPRE										
V-10029 +	0.02											
bensulfuron +	0.06											
Kinetic (0.25%)		4-5 LF	0	100	100	100	0	0	95	0	0	95
Pendimethalin fb	1.0	DPRE										
propanil +	3.0											
bensulfuron	0.06	4-5 LF	100	100	100	100	0	100	95	0	100	100
Pendimethalin fb	1.0	DPRE										
V-10029 +	0.02											
bensulfuron +	0.06											
Kinetic (0.25%)		POFL	0	100	100	100	0	0	0	0	0	0
Pendimethalin fb	1.0	DPRE										
bensulfuron +	0.06											
Kinetic (0.25%)		POFL	0	100	100	100	0	0	0	0	0	0
Pendimethalin fb	1.0	DPRE										
V-10029 +	0.02											
Kinetic (0.25%)		POFL	0	100	100	100	0	0	0	0	0	0

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/9	7/23	8/20	9/8	Morningglory sp. (IPOSS) 6/2	6/9	6/17	Sicklepod (SENOB) 6/2	6/9	6/17
	(lb/A)		– – – – – – – – – – – – – – – – (%) –									
Pendimethalin fb	1.0											
molinate	4.0	POFL	0	0	0	0	0	0	0	0	0	0
Pendimethalin fb	1.0	DPRE										
V-10029 +	0.02											
triclopyr +	0.28											
Kinetic (0.25%)		LPOFL	0	100	100	100	0	0	0	0	0	0
Pendimethalin fb	1.0											
molinate fb	4.0	POFL										
triclopyr +	0.28											
Kinetic (0.25%)		LPOFL	0	100	100	100	0	0	0	0	0	0
V-10029 +	0.02											
F8426-2 +	0.02											
Kinetic (0.25%)		4-5 LF	0	90	90	95	0	0	96	0	0	98
LSD (0.05)			1	6	6	4	4	1	16	1	4	14

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Eclipta (ECLAL) control 6/17	Rice injury 6/2	6/9	6/17	7/3	7/23	8/20	9/8	Rice yield
	(lb/A)		– – – – – – – – – – – – – – – – (%) –								(lb/A)
Untreated check			0	0	0	0	0	0	0	0	2475
V-10029 +	0.02										
Kinetic (0.25%)		PREFL	0	0	0	0	5	0	0	0	3780
(Propanil + molinate)	6.0	PREFL	0	0	0	0	6	0	0	0	4095

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Eclipta (ECLAL) control	Rice injury							Rice yield
			6/17	6/2	6/9	6/17	7/3	7/23	8/20	9/8	
	(lb/A)					(%)					(lb/A)
V-10029 +	0.02										
Kinetic (0.25%) fb		4-5 LF									
triclopyr +	0.28										
Kinetic (0.25%)		LPOFL	100	0	0	0	3	3	0	0	4995
(Propanil + molinate) fb	4.5	4-5 LF									
triclopyr +	0.28										
Kinetic (0.25%)		LPOFL	100	0	0	0	16	8	0	3	5670
Pendimethalin fb	1.0	DPRE									
V-10029 +	0.02										
Kinetic (0.25%)		4-5 LF	100	0	0	0	29	14	0	5	5625
Pendimethalin fb	1.0	DPRE									
propanil	4.0	4-5 LF	100	0	0	0	20	5	0	4	6660
Thiobencarb fb	3.0	DPRE									
V-10029 +	0.02										
Kinetic (0.25%)		4-5 LF	100	0	0	0	21	10	0	3	5085
Thiobencarb fb	3.0	DPRE									
(propanil + molinate)	4.5	4-5 LF	100	0	0	0	14	3	0	3	4860
Thiobencarb +	2.0										
propanil fb	3.0	2-3 LF									
V-10029 +	0.02										
thiobencarb +	2.0										
Kinetic (0.25%)		4-5 LF	100	6	1	4	14	6	0	3	5580
Thiobencarb +	2.0										
propanil fb	3.0	2-3 LF									
thiobencarb +	2.0										
propanil	3.0	4-5 LF	100	11	10	0	24	5	3	1	5535
Pendimethalin fb	1.0	DPRE									
V-10029 +	0.02										
bensulfuron +	0.06										
Kinetic (0.25%)		4-5 LF	95	0	0	0	26	15	4	10	5490

continued

Table 39. Continued.

Herbicide	Rate	Application timing	Eclipta (ECLAL) control	Rice injury							Rice yield
			6/17	6/2	6/9	6/17	7/3	7/23	8/20	9/8	
	(lb/A)					(%)					(lb/A)
Pendimethalin fb	1.0	DPRE									
propanil +	3.0										
bensulfuron	0.06	4-5 LF	100	0	0	0	5	1	0	0	5400
Pendimethalin fb	1.0	DPRE									
V-10029 +	0.02										
bensulfuron +	0.06										
Kinetic (0.25%)		POFL	0	0	0	0	4	0	0	0	4680
Pendimethalin fb	1.0	DPRE									
bensulfuron +	0.06										
Kinetic (0.25%)		POFL	0	0	0	0	10	0	0	0	2835
Pendimethalin fb	1.0	DPRE									
V-10029 +	0.02										
Kinetic (0.25%)		POFL	0	0	0	0	14	0	0	0	4320
Pendimethalin fb	1.0										
molinate	4.0	POFL	0	0	0	0	8	0	0	0	2520
Pendimethalin fb	1.0	DPRE									
V-10029 +	0.02										
triclopyr +	0.28										
Kinetic (0.25%)		LPOFL	0	0	0	0	9	0	0	0	2835
Pendimethalin fb	1.0										
molinate fb	4.0	POFL									
triclopyr +	0.28										
Kinetic (0.25%)		LPOFL	0	0	0	0	9	0	0	0	2835
V-10029 +	0.02										
F8426-2 +	0.02										
Kinetic (0.25%)		4-5 LF	100	0	0	10	14	11	3	10	4905
LSD (0.05)			0	2	1	4	14	9	3	7	1220

Table 40. Thiobencarb (Bolero) for aquatic weed control on fallow ground, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... N/A
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... N/A
Harvest date ..... N/A
Crop/Variety ..... N/A
Date of Flood ..... June 19 and 20, 1997

Comments: Normal rice cultivation practices were followed, but rice was not planted. DPRE = delayed preemergence; EPOST = early postemergence; PREFL = preflood.

Application type	DPRE	EPOST	PREFL
Date applied	May 12, 1997	May 29, 1997	June 17, 1997
Time	4:50 pm	6:40 pm	1:45 pm
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	60 / 62	80 / 80	85 / 78
Relative humidity (%)	53	38	42
Wind (mph, direction)	4	4	4
Weather	cloudy	clear	partly cloudy
Soil moisture	moist	damp	soggy
Crop stage / Height	N/A	N/A	N/A
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	20 / 6 / 20	26 / 6 / 20
Gpa / Psi	10 / 24	10 / 25	10 / 24
Weed species	– – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – –
BRAPP	N/A	2-3 lf / 1-2"	N/A
POLLA	N/A	N/A	4-5 lf / 4"
CYPES	N/A	3-5 lf / 4-6"	6 lf / 4"

Conclusions: This study was conducted to evaluate different rates of Bolero following various programs for aquatic weed control. The study was not planted to rice to attain maximum aquatic stands. However, stands were erratic, and results are inconclusive. Ducksalad and purple ammania control from some treatments was good early, but all treatments had poor weed control at harvest time.

Table 40.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 5/30	6/16	6/27	7/23	8/27	Yellow nutsedge (CYPES) 6/27	7/23	8/27
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	0
Quinclorac +	0.374									
pendimethalin fb	1.0	DPRE								
thiobencarb	3.0	PREFL	90	89	0	48	0	28	0	0
Quinclorac +	0.374									
pendimethalin fb	1.0	DPRE								
thiobencarb	4.0	PREFL	90	78	0	31	25	23	0	15
Propanil fb	3.0	EPOST								
thiobencarb	3.0	PREFL	0	84	33	58	48	34	0	43
Propanil fb	3.0	EPOST								
thiobencarb	4.0	PREFL	0	86	58	48	100	28	0	35
(Propanil + molinate) fb	4.5	EPOST								
thiobencarb	3.0	PREFL	0	100	100	93	100	54	0	35
(Propanil + molinate) fb	4.5	EPOST								
thiobencarb	4.0	PREFL	5	100	100	100	100	59	0	58
(Propanil + molinate) fb	4.5	EPOST								
bensulfuron +	0.125									
AG-98 (0.25%)		PREFL	8	100	100	100	100	55	0	68
LSD (0.05)			9	15	33	50	37	26	0	45

continued

Table 40. Continued.

Herbicide	Rate	Application timing	Weed control: Purple ammania (AMMCO) 6/16	7/23	8/7	8/20	8/27	Ducksalad (HETLI) 7/23	8/4	8/20	8/27
	(lb/A)		(%)								
Untreated check			0	0	0	0	0	0	0	0	0
Quinclorac +	0.374										
pendimethalin fb	1.0	DPRE									
thiobencarb	3.0	PREFL	88	100	48	58	35	83	45	5	10
Quinclorac +	0.374										
pendimethalin fb	1.0	DPRE									
thiobencarb	4.0	PREFL	75	100	61	50	33	93	68	15	25
Propanil fb	3.0	EPOST									
thiobencarb	3.0	PREFL	53	95	29	59	43	65	48	9	0
Propanil fb	3.0	EPOST									
thiobencarb	4.0	PREFL	65	95	31	33	30	63	53	10	10
(Propanil + molinate) fb	4.5	EPOST									
thiobencarb	3.0	PREFL	73	100	18	40	28	75	38	5	13
(Propanil + molinate) fb	4.5	EPOST									
thiobencarb	4.0	PREFL	88	100	49	48	28	78	58	11	5
(Propanil + molinate) fb	4.5	EPOST									
bensulfuron +	0.125										
AG-98 (0.25%)		PREFL	100	100	79	84	79	31	0	0	0
LSD (0.05)			43	8	44	38	40	28	26	22	26

Table 41. Thiobencarb (Bolero) for weed control in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 18, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: DPRE = delayed preemergence; EPOST = early postemergence; LPOST = late postemergence.

Application type	DPRE	EPOST	LPOST
Date applied	May 12, 1997	May 30, 1997	June 16, 1997
Time	3:30 pm	6:15 pm	3:50 pm
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	60 / 62	80 / 80	80 / 80
Relative humidity (%)	66	40	66
Wind (mph, direction)	4	4	3
Weather	cloudy	clear	partly cloudy
Soil moisture	moist	damp	damp
Crop stage / Height	N/A	2-3 lf / 4"	5 lf / 8"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	20 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 24	10 / 26	10 / 22
Weed species (population):	– – – – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – – – –
BRAPP (55 / ft² EPOST; 8 / ft² LPOST)	N/A	2 lf / 1-2"	6 lf / 6"

Conclusions: Several of the programs provided outstanding grass control. Pendimethalin (Prowl) and thiobencarb (Bolero) alone as well as the tank mix were weak on broadleaf signalgrass.

Table 41.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control						
			5/22	5/30	6/9	6/17	7/22	8/21	8/27
	(lb/A)		(%)						
Untreated check			0	0	0	0	0	0	0
Thiobencarb +	3.0								
quinclorac	0.5	DPRE	88	90	100	98	100	100	100
Thiobencarb +	2.0								
quinclorac fb	0.5	DPRE							
thiobencarb +	2.0								
(propanil + molinate)	4.5	EPOST	96	90	100	96	100	100	100
Thiobencarb +	4.0								
pendimethalin	1.0	DPRE	88	80	87	78	68	75	70
Pendimethalin fb	1.0	DPRE							
thiobencarb +	3.0								
(propanil + molinate)	4.5	EPOST	73	65	100	93	98	100	95
Thiobencarb +	2.0								
pendimethalin fb	2.0	DPRE							
thiobencarb +	2.0								
propanil	3.0	EPOST	65	64	100	94	98	100	96
Thiobencarb +	2.0								
pendimethalin fb	1.0	DPRE							
thiobencarb +	2.0								
(propanil + molinate)	4.5	LPOST	58	59	50	48	76	88	83
Thiobencarb +	3.0								
propanil	3.0	EPOST	0	0	90	88	94	96	93
Thiobencarb +	3.0								
(propanil + molinate)	4.5	EPOST	0	0	96	90	98	99	94
Thiobencarb +	2.0								
propanil fb	3.0	EPOST							
thiobencarb +	2.0								
propanil	3.0	LPOST	0	0	86	84	99	100	100
LSD (0.05)			13	10	10	16	16	12	11

continued

Table 41. Continued.

Herbicide	Rate	Application timing	Rice injury 5/22	5/30	6/9	6/17	7/22	8/21	8/27	Rice yield
	(lb/A)		(%)							(lb/A)
Untreated check			0	0	0	0	0	0	0	2700
Thiobencarb +	3.0									
quinclorac	0.5	DPRE	20	10	0	0	0	0	0	6345
Thiobencarb +	2.0									
quinclorac fb	0.5	DPRE								
thiobencarb +	2.0									
(propanil + molinate)	4.5	EPOST	13	11	1	0	0	0	0	7245
Thiobencarb +	4.0									
pendimethalin	1.0	DPRE	10	10	0	0	0	0	0	5895
Pendimethalin fb	1.0	DPRE								
thiobencarb +	3.0									
(propanil + molinate)	4.5	EPOST	5	10	5	0	0	0	0	6750
Thiobencarb +	2.0									
pendimethalin fb	2.0	DPRE								
thiobencarb +	2.0									
propanil	3.0	EPOST	0	10	6	0	0	0	0	6705
Thiobencarb +	2.0									
pendimethalin fb	1.0	DPRE								
thiobencarb +	2.0									
(propanil + molinate)	4.5	LPOST	5	10	1	8	0	0	0	6255
Thiobencarb +	3.0									
propanil	3.0	EPOST	0	0	10	0	0	0	0	6300
Thiobencarb +	3.0									
(propanil + molinate)	4.5	EPOST	0	0	6	0	0	0	0	6975
Thiobencarb +	2.0									
propanil fb	3.0	EPOST								
thiobencarb +	2.0									
propanil	3.0	LPOST	0	0	3	9	0	0	0	6615
LSD (0.05)			10	1	5	2	NS	NS	NS	747

Table 42. Pendimethalin (Pentagon and Prowl) for weed control in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 19, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: The Pentagon DF formulation did not dissolve well in water and left an orange sludge at the bottom of the spray bottles after application. DPRE = delayed preemergence; EPOST = early postemergence.

Application type	DPRE	EPOST
Date applied	May 12, 1997	May 29, 1997
Time	5:00 pm	6:45 pm
Incorporation equipment	N/A	N/A
Air / Soil temperature (F)	60 / 62	80 / 80
Relative humidity (%)	66	38
Wind (mph, direction)	4	4.5
Weather	cloudy	clear
Soil moisture	moist	damp
Crop stage / Height	N/A	2-3 lf / 3"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 24	10 / 25
Weed species (population):	– – – – – – – – – (height / # leaves) – – – – – – – – –	
BRAPP (30 / ft^2)	N/A	2-3 lf / 2"
POLSS (1 / ft^2)	N/A	coty. / 2"

Conclusions: All treatments provided excellent broadleaf signalgrass control. Smartweed control was better with quinclorac + pendimethalin applied DPRE. The Pentagon formulation did not dissolve well, and continual agitation was necessary.

Table 42.

Herbicide	Rate	Application timing	Weed control									
			Broadleaf signalgrass (BRAPP)							Smartweed (POLSS)		
			5/30	6/9	6/17	6/27	7/23	8/21	9/2	7/23	8/21	9/2
	(lb/A)		(%)									
Untreated check			0	0	0	0	0	0	0	0	0	0
Quinclorac + pendimethalin (Pentagon)	0.37 + 1.0	DPRE	90	100	100	98	100	100	100	93	83	78
Quinclorac + pendimethalin (Prowl)	0.37 + 1.0	DPRE	90	100	100	98	100	100	100	86	80	74
Quinclorac + pendimethalin (Pentagon)	0.188 + 1.0	DPRE	90	100	100	100	100	100	100	93	79	80
Quinclorac fb pendimethalin (Prowl)	0.188 DPRE + 1.0	EPOST	90	96	100	100	100	100	100	50	0	0
Quinclorac + pendimethalin (Pentagon)	0.5 + 1.0	EPOST	0	93	100	100	100	100	100	0	0	0
Quinclorac + pendimethalin (Prowl)	0.5 + 1.0	EPOST	0	93	100	100	100	100	100	48	33	0
Propanil + quinclorac + Penetrator Plus (1 pt/A)	3.0 + 0.125	EPOST	0	98	100	100	100	100	100	98	96	95
LSD (0.05)			1	5	1	4	1	1	1	12	21	13

continued

Table 42. Continued.

Herbicide	Rate	Application timing	Rice injury 5/30	6/9	6/17	6/27	7/23	8/21	9/2	Rice yield
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	2655
Quinclorac + pendimethalin (Pentagon)	0.37 1.0	DPRE	10	4	0	0	0	0	0	6120
Quinclorac + pendimethalin (Prowl)	0.37 1.0	DPRE	10	0	0	0	0	0	0	5940
Quinclorac + pendimethalin (Pentagon)	0.188 1.0	DPRE	10	1	0	0	0	0	0	6300
Quinclorac fb pendimethalin (Prowl)	0.188 1.0	DPRE EPOST	10	0	0	0	0	0	0	6030
Quinclorac + pendimethalin (Pentagon)	0.5 1.0	EPOST	0	0	0	0	0	0	0	6255
Quinclorac + pendimethalin (Prowl)	0.5 1.0	EPOST	0	3	0	0	0	0	0	5985
Propanil + quinclorac + Penetrator Plus (1 pt/A)	3.0 0.125	EPOST	0	5	0	0	0	0	0	6435
LSD (0.05)			NS	NS	NS	NS	NS	NS	NS	787

Table 43. Preflood weed control in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 28, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: 3-4 LF = 3-4 leaf rice; PREFL = preflood.

Application type	3-4 LF	PREFL
Date applied	June 4, 1997	June 17, 1997
Time	9:45 am	3:15 pm
Incorporation equipment	N/A	N/A
Air / Soil temperature (F)	69 / 62	85 / 78
Relative humidity (%)	70	42
Wind (mph, direction)	4.5	4
Weather	cloudy	partly cloudy
Soil moisture	damp	soggy
Crop stage / Height	4-5 lf / 4"	6 lf / 6"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	22 / 6 / 20	24 / 6 / 20
Gpa / Psi	10 / 26	10 / 24
Weed species (population):	– – – – – – – – (height / # leaves)	– – – –
BRAPP (15 / ft^2)	3 lf / 2-4"	N/A
IPOSS (2-7 / ft^2)	4 lf / 3"	2-4 lf / 3-6"
POLLA (1 / ft^2)	8 lf / 5"	4-6 lf / 3-6"
CYPES (2-4 / ft^2)	7 lf / 8"	7 lf / 15"
SEBEX 1< / ft^2)	2 lf / 4"	5 lf / 6"

Conclusions: F8426-2 (Shark) provided effective smartweed control. There was some antagonism with F8426-2 + propanil. All treatments controlled hemp sesbania. F8426-2 is primarily a broadleaf herbicide for rice. Research will be expanded in 1998.

Table 43.

			Weed control							
			Broadleaf signalgrass (BRAPP)		Hemp sesbania (SEBEX)			Pale smartweed (POLLA)		
Herbicide	Rate	Application timing	6/17	9/8	7/22	8/20	9/8	7/22	8/20	9/8
	(lb/A)		– – – – – – – – – – – – – – – – – – (%) – – – – – – – – – – – – – – – – – –							
All treatments were treated with fenoxaprop, 0.075 lb/A at 3-4 LF:										
Untreated check			0	0	0	0	0	0	0	0
F8426-2 +	0.01									
AG-98 (0.25%)		PREFL	100	100	100	100	100	93	98	95
F8426-2 +	0.02									
AG-98 (0.25%)		PREFL	100	100	100	100	100	88	90	95
F8426-2 +	0.03									
AG-98 (0.25%)		PREFL	100	100	100	100	100	100	99	98
F8426-2 +	0.02									
propanil	1.0	PREFL	100	100	100	100	100	63	88	80
F8426-2 +	0.02									
propanil	2.0	PREFL	100	100	100	100	100	83	95	85
F8426-2 +	0.02									
propanil	4.0	PREFL	100	100	100	100	100	83	93	80
Thiobencarb	4.0	PREFL	100	100	100	100	100	0	10	30
(Propanil + molinate)	6.0	PREFL	100	100	100	100	100	78	84	81
Propanil	4.0	PREFL	100	100	98	95	100	70	86	85
Quinclorac +	0.38									
Agri-Dex (1%)		PREFL	100	100	100	100	100	0	30	35
Triclopyr +	0.25									
AG-98 (0.25%)		PREFL	100	100	100	100	100	28	28	28
LSD (0.05)			1	1	2	4	1	26	24	27

continued

Table 43. Continued.

Herbicide	Rate	Application timing	Weed control: Morningglory spp. (IPOSS) 6/17	Weed control: Eclipta (ECLAL) 6/17	Rice injury 9/17	Rice injury 7/22	Rice injury 8/20	Rice injury 9/8	Rice yield
	(lb/A)		(%)						(lb/A)
All treatments were treated with fenoxaprop, 0.75; 3-4 LF:									
Untreated check			0	0	0	0	0	0	5265
F8426-2 +	0.01								
AG-98 (0.25%)		PREFL	0	0	0	0	0	0	6435
F8426-2 +	0.02								
AG-98 (0.25%)		PREFL	0	0	0	0	0	0	6165
F8426-2 +	0.03								
AG-98 (0.25%)		PREFL	0	0	0	0	0	0	6030
F8426-2 +	0.02								
propanil	1.0	PREFL	0	0	0	0	0	0	5805
F8426-2 +	0.02								
propanil	2.0	PREFL	0	0	0	0	4	0	6570
F8426-2 +	0.02								
propanil	4.0	PREFL	0	0	0	0	0	0	6480
Thiobencarb	4.0	PREFL	0	0	0	0	0	0	6075
(Propanil + molinate)	6.0	PREFL	0	0	0	0	3	0	6435
Propanil	4.0	PREFL	0	0	0	0	0	0	5490
Quinclorac +	0.38								
Agri-Dex (1%)		PREFL	0	0	0	0	0	0	5625
Triclopyr +	0.25								
AG-98 (0.25%)		PREFL	0	0	0	3	0	0	6075
LSD (0.05)			NS	NS	NS	NS	NS	NS	711

Table 44. Propanil (Super Wham) in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6
Planting date ..... May 7, 1997
Harvest date ..... September 28, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: 2-3 LF = 2-3 leaf rice; 4 LF = 4 leaf rice; 6 LF = 6 leaf rice.

Application type	2-3 LF	4 LF	6 LF
Date applied	May 29, 1997	June 4, 1997	June 17, 1997
Time	7:30 pm	9:15 am	3:00 pm
Incorporation equipment	N/A	N/A	N/A
Air / Soil temperature (F)	74 / 78	69 / 62	85 / 85
Relative humidity (%)	60	73	42
Wind (mph, direction)	2	1.5	4
Weather	clear	cloudy	partly cloudy
Soil moisture	damp	damp	soggy
Crop stage / Height	1-2 lf / 3"	4 lf / 4"	4-6 lf / 5"
Sprayer type / mph	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3	$BkPkCO_2$ / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	22 / 6 / 20	22 / 6 / 20
Gpa / Psi	10 / 25	10 / 27	10 / 25
Weed species (population):	– – – – – – – – – – –	(height / # leaves)	– – – – – – – – – – –
BRAPP (20-28 / ft^2)	2 lf / 0.25"	3 lf / 2"	4 lf / 3"
IPOSS (<1 / ft^2)	coty. / 1"	2 lf / 2"	3 lf / 2"

Conclusions: All treatments in this study effectively controlled broadleaf signalgrass without significant differences in yield.

Table 44.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/9	9/17	7/3	7/22	8/20	9/8	Morningglory sp. (IPOSS) 6/9	Eclipta (ECLAL) 6/17
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	0
Propanil +	2.0									
Penetrator Plus (1 pt/A)		2-3 LF	99	88	100	94	98	90	99	86
Propanil + quinclorac +	2.0 + 0.094									
Penetrator Plus (1 pt/A)		2-3 LF	100	100	100	100	100	100	100	100
Propanil + quinclorac +	2.0 + 0.125									
Penetrator Plus (1 pt/A)		2-3 LF	100	100	100	100	100	100	100	100
Propanil +	3.0									
Penetrator Plus (1 pt/A)		2-3 LF	100	91	100	96	100	89	100	94
Propanil + quinclorac +	3.0 + 0.094									
Penetrator Plus (1 pt/A)		2-3 LF	100	98	100	100	100	100	100	100
Propanil + quinclorac +	3.0 + 0.125									
Penetrator Plus (1 pt/A)		2-3 LF	100	100	100	100	100	100	100	100
Propanil +	4.0									
Penetrator Plus (1 pt/A)		4 LF	100	99	100	100	100	100	100	100
Propanil + quinclorac +	4.0 + 0.125									
Penetrator Plus (1 pt/A)		4 LF	100	100	100	100	100	100	100	100
Propanil + quinclorac +	4.0 + 0.188									
Penetrator Plus (1 pt/A)		4 LF	100	100	100	100	100	100	100	100
Propanil + quinclorac +	4.0 + 0.125									
Penetrator Plus (1 pt/A)		6 LF	0	0	100	99	100	95	0	0
Propanil + quinclorac +	4.0 + 0.188									
Penetrator Plus (1 pt/A)		6 LF	0	0	100	99	100	99	0	0
LSD (0.05)			1	3	0	2	2	8	1	5

continued

Table 44. Continued.

Herbicide	Rate	Application timing	Rice injury 6/9	9/17	7/3	7/22	8/20	9/8	Rice yield
	(lb/A)		(%)						
Untreated check			0	0	0	0	0	0	2340
Propanil + Penetrator Plus (1 pt/A)	2.0	2-3 LF	0	0	0	0	0	0	5715
Propanil + quinclorac + Penetrator Plus (1 pt/A)	2.0 + 0.094	2-3 LF	0	0	0	0	0	0	6120
Propanil + quinclorac + Penetrator Plus (1 pt/A)	2.0 + 0.125	2-3 LF	0	3	0	0	0	0	5805
Propanil + Penetrator Plus (1 pt/A)	3.0	2-3 LF	0	0	0	0	0	0	5400
Propanil + quinclorac + Penetrator Plus (1 pt/A)	3.0 + 0.094	2-3 LF	0	0	3	0	0	0	5805
Propanil + quinclorac + Penetrator Plus (1 pt/A)	3.0 + 0.125	2-3 LF	0	1	1	0	0	0	5625
Propanil + Penetrator Plus (1 pt/A)	4.0	4 LF	1	4	4	0	0	4	5445
Propanil + quinclorac + Penetrator Plus (1 pt/A)	4.0 + 0.125	4 LF	1	8	1	0	0	0	5355
Propanil + quinclorac + Penetrator Plus (1 pt/A)	4.0 + 0.188	4 LF	3	10	1	0	0	3	5805
Propanil + quinclorac + Penetrator Plus (1 pt/A)	4.0 + 0.125	6 LF	0	0	3	0	0	3	5805
Propanil + quinclorac + Penetrator Plus (1 pt/A)	4.0 + 0.188	6 LF	0	0	1	0	0	0	6435
LSD (0.05)			NS	4	NS	NS	NS	NS	788

Table 45. Propanil synergists, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 6 ft by 20 ft
Row width / Number of rows per plot ..... 7 in / 9 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH / CEC ..... 1.9 / 4.6 / 7

Planting date ..... May 7, 1997
Harvest date ..... September 21, 1997
Crop/Variety ..... Rice/Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: Fertilizer: 100 lb/A N preflood; 200 lb/A at 0.5-inch internode fb 100 lb/A 10 days later. EPOST = early postemergence; LPOST = late postemergence.

Application type	EPOST	LPOST
Date applied	May 29, 1997	June 10, 1997
Time	4:00 pm	7:00 pm
Incorporation equipment	N/A	N/A
Air/Soil temperature (F)	83 / 83	81 / 80
Relative humidity (%)	79	77
Wind (mph, direction)	5	0
Weather	clear	clear
Soil moisture	moist	moist
Crop stage/Height	2-3 leaf / 5 in.	4-5 leaf / 8 in.
Sprayer type/mph	Backpack CO_2 / 3	Backpack CO_2 / 3
Nozzle type/Size	TeeJet SS / 11002	TeeJet SS / 11002
Boom ht / # Noz / Spacing (in.)	16" / 4 / 20"	16" / 4 / 20"
Gpa / Psi	15 / 28	15 / 28
Weed species (population):	– – – – – (height / # leaves)	– – – – –
BRAPP (7-15/ft²)	2-lf / 1 in. / 7-10 ft²	tillering / 3-4 in. / 15 ft²

Conclusions: This test was conducted in order to evaluate propanil synergist activity on broadleaf signalgrass and rice. The highest yield was obtained with propanil + piperophos + quinclorac, but this was not significantly different from most other treatments. The sequential applications of propanil + piperophos and propanil + carbaryl resulted in reduced yields and high injury (38 and 30%, respectively).

Table 45.

Treatment	Rate	Application timing	Broadleaf signalgrass control 6/10	6/18	7/1	7/29	Rice injury 6/10	6/18	7/1	7/29	Rice yield
	(lb/A)		(%)								(lb/A)
Untreated check			0	0	0	0	0	0	0	0	2178
Propanil	3.0	EPOST	76	78	93	73	5	5	3	0	5751
Propanil + anilophos	3.0 + 0.5	EPOST	76	76	86	79	10	8	5	1	5465
Propanil + piperophos	3.0 + 0.75	EPOST	94	93	94	89	20	13	11	3	5520
Propanil + carbaryl	3.0 + 0.1	EPOST	93	91	95	86	24	21	13	6	4853
(Propanil + molinate)	4.5	EPOST	89	89	93	85	11	9	6	0	5023
Propanil fb propanil	3.0 fb 3.0	EPOST LPOST	79	88	94	95	8	10	4	0	6024
Propanil + anilophos fb propanil + anilophos	3.0 + 0.5 fb 3.0 + 0.5	EPOST LPOST	84	85	93	88	14	13	16	1	5146
Propanil + piperophos fb propanil + piperophos	3.0 + 0.75 fb 3.0 + 0.75	EPOST LPOST	89	91	95	95	10	15	65	38	4635
Propanil + carbaryl fb propanil + carbaryl	3.0 + 0.1 fb 3.0 + 0.1	EPOST LPOST	88	95	95	95	23	39	58	30	4937
(Propanil + molinate) fb (propanil + molinate)	4.5 fb 4.5	EPOST LPOST	86	94	95	95	13	15	10	0	5738
Propanil + anilophos + thiobencarb	3.0 + 0.5 3.0	EPOST	95	95	95	95	10	9	6	0	5486
Propanil + anilophos + quinclorac	3.0 + 0.5 + 0.375	EPOST	95	95	95	95	10	9	4	0	5622
Propanil + anilophos + pendimethalin	3.0 + 0.5 + 1.0	EPOST	95	95	95	93	15	13	9	3	5445
Propanil + piperophos + thiobencarb	3.0 + 0.75 + 3.0	EPOST	94	93	95	95	11	9	8	0	5336
Propanil + piperophos + quinclorac	3.0 + 0.75 + 0.375	EPOST	95	95	95	95	14	13	13	0	6132
Propanil + piperophos +pendimethalin	3.0 + 0.75 1.0	EPOST	93	93	95	94	15	11	13	0	5567

continued

Table 45. Continued.

Treatment	Rate	Application timing	Broadleaf signalgrass control 6/10	6/18	7/1	7/29	Rice injury 6/10	6/18	7/1	7/29	Rice yield
	(lb/A)		(%)				(%)				(lb/A)
Propanil + carbaryl + thiobencarb	3.0 + 0.1 + 3.0	EPOST	95	95	95	95	34	26	22	5	5427
Propanil + carbaryl + quinclorac	3.0 + 0.1 + 0.375	EPOST	95	95	95	95	27	20	23	2	5908
Propanil + carbaryl + pendimethalin	3.0 + 0.1 + 1.0	EPOST	95	95	95	94	33	24	16	4	5282
(Propanil + molinate) + thiobencarb	4.5 + 3.0	EPOST	58	90	95	95	8	8	7	0	5962
(Propanil + molinate) + quinclorac	4.5 + 0.375	EPOST	95	95	95	95	15	10	5	0	5704
(Propanil + molinate) + pendimethalin	4.5 + 1.0	EPOST	93	93	95	92	13	11	8	3	5581
Propanil + thiobencarb	3.0 + 3.0	EPOST	90	89	95	88	14	10	3	0	5817
Propanil + quinclorac	3.0 + 0.375	EPOST	95	91	95	94	14	10	4	0	5765
Propanil + pendimethalin	3.0 + 1.0	EPOST	78	76	84	81	13	10	11	1	5649
LSD (0.05)			14	8	9	10	8	6	9	6	1026

Table 46. Early postemergence weed control in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 30, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: 2-3 LF = 2-3 leaf rice; PRELF = preflood.

Application type	2-3 LF	PREFL
Date applied	May 29, 1997	June 18, 1997
Time	7:50 pm	11:00 am
Incorporation equipment	N/A	N/A
Air / Soil temperature (F)	74 / 68	78 / 72
Relative humidity (%)	60	65
Wind (mph, direction)	2	0
Weather	clear	clear
Soil moisture	damp	wet
Crop stage / Height	2 lf / 3"	4-5 tillers / 7.5"
Sprayer type / mph	BkPkCO_2 / 3	BkPkCO_2 / 3
Nozzle type / Size	Driftguard / 110015	Driftguard / 110015
Boom ht / # Noz / Spacing (in.)	22 / 6 / 20	22 / 6 / 20
Gpa / Psi	10 / 25	10 / 25
Weed species (population):	– – – – – (height / # leaves) – – – – – –	
BRAPP (20/ft² at 2-3 LF; 6/ft² PREFL)	1-3 lf / 1"	4 lf / 3"

Conclusions: Many of the reduced rate programs continue to provide grass control and rice yield equivalent to that of labeled rate programs. There was little injury from the treatments, and several gave 100% grass control.

Table 46. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control					Rice injury					Rice yield
			6/9	6/17	7/3	7/23	8/19	6/9	6/17	7/3	7/23	8/19	
	(lb/A)		(%)										(lb/A)
Untreated check			0	0	0	0	0	0	0	0	0	0	4590
Propanil (Stam M-4)	4.0	2-3 LF	78	43	100	68	62	0	0	0	0	0	6435
Propanil (Stam 80 DF) + AG-98 (0.25%)	4.0	2-3 LF	67	40	93	57	51	0	0	0	0	0	6750
Propanil (Super Wham) + Penetrator Plus (1 pt/A)	4.0	2-3 LF	83	50	100	70	58	0	0	0	0	0	5805
(Propanil + molinate)	6.0	2-3 LF	96	90	100	93	92	3	0	0	4	0	6615
Propanil (Stam M-4) fb propanil (Stam M-4)	3.0 3.0	2-3 LF PREFL	84	74	100	100	100	3	0	0	6	0	7155
Propanil (Stam 80 DF) + AG-98 (0.25%) fb propanil (Stam 80 DF) + AG-98 (0.25%)	3.0 3.0	2-3 LF PREFL	80	35	100	99	99	0	0	0	3	0	6840
(Propanil + molinate) fb (propanil + molinate)	4.5 4.5	2-3 LF PREFL	78	48	100	99	100	0	0	0	0	0	6255
Propanil (Super Wham) + Penetrator Plus (1 pt/A) fb propanil (Super Wham) + Penetrator Plus (1 pt/A)	3.0 3.0	2-3 LF PREFL	96	80	100	100	100	0	0	3	15	0	7065
Quinclorac + Agri-Dex (1%)	0.125	2-3 LF	83	96	100	100	100	0	0	0	0	0	6210
Quinclorac + Agri-Dex (1%)	0.25	2-3 LF	95	100	98	100	100	0	0	0	5	0	6570
Quinclorac + Agri-Dex (1%)	0.375	2-3 LF	96	100	100	100	100	0	0	0	0	0	7695
Propanil (Stam M-4) + quinclorac	3.0 0.125	2-3 LF	100	100	100	100	100	0	0	13	20	8	7065
Propanil (Stam M-4) + quinclorac	3.0 0.25	2-3 LF	99	100	100	100	100	0	0	0	10	0	6390
Propanil (Stam M-4)	3.0	2-3 LF	70	60	100	80	84	0	0	0	8	0	6840
Propanil (Stam M-4) + thiobencarb	3.0 3.0	2-3 LF	86	83	100	90	86	0	0	0	0	0	7245

continued

Table 46. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control 6/9	6/17	7/3	7/23	8/19	Rice injury 6/9	6/17	7/3	7/23	8/19	Rice yield
	(lb/A)		(%)										(lb/A)
Propanil (Stam 80DF) + thiobencarb + AG-98 (0.25%)	3.0 3.0	2-3 LF	89	80	100	84	87	0	0	0	3	0	7020
Propanil (Stam M-4) + pendimethalin	3.0 1.0	2-3 LF	93	88	100	93	96	0	0	0	10	0	6795
Propanil (Stam 80DF) + pendimethalin + AG-98 (0.25%)	3.0 1.0	2-3 LF	53	47	100	63	57	0	0	0	0	0	5850
Propanil (Stam 80DF) + quinclorac + AG-98 (0.25%)	3.0 0.125	2–3 LF	100	100	100	100	100	4	1	0	5	0	7245
Propanil (Super Wham) + quinclorac + Penetrator Plus (1 pt/A)	3.0 0.125	2-3 LF	100	100	100	100	100	4	0	0	0	0	6750
(Propanil + molinate) + quinclorac	4.5 0.125	2-3 LF	100	100	100	100	100	0	0	3	6	2	7290
Propanil (Stam M-4) + quinclorac	2.0 0.125	2-3 LF	99	100	100	100	100	0	0	0	5	0	6750
Propanil (Stam M-4) + quinclorac	2.0 0.25	2-3 LF	100	100	100	100	100	0	0	0	15	0	6705
Propanil (Super Wham) + quinclorac + Penetrator Plus (1 pt/A)	2.0 0.125	2-3 LF	100	98	100	100	100	0	0	0	8	2	7065
Propanil (Super Wham) + quinclorac + Penetrator Plus (1 pt/A)	2.0 0.25	2-3 LF	100	100	100	100	100	0	0	0	9	0	7560
Propanil (Stam 80DF) + quinclorac + AG-98 (0.25%)	2.0 0.125	2-3 LF	98	100	100	100	100	0	0	0	8	0	7245
Propanil (Stam 80DF) + quinclorac + AG-98 (0.25%)	2.0 0.25	2-3 LF	99	100	100	100	100	3	0	5	15	2	6300

continued

Table 46. Continued.

Herbicide	Rate	Application timing	Broadleaf signalgrass (BRAPP) control					Rice injury					Rice yield
			6/9	6/17	7/3	7/23	8/19	6/9	6/17	7/3	7/23	8/19	
	(lb/A)		(%)										(lb/A)
(Propanil + molinate) + quinclorac	3.0 0.125	2-3 LF	100	100	100	100	100	0	0	3	10	0	7020
(Propanil + molinate) + quinclorac	3.0 0.25	2-3 LF	100	100	100	100	100	0	0	4	10	0	6975
LSD (0.05)			10	11	3	9	14	NS	NS	NS	NS	NS	1269

Table 47. Broadleaf weed control in rice, Lonoke.

TEST INFORMATION

Location ..... Lonoke
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Calhoun silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.9 / 4.6

Planting date ..... May 7, 1997
Harvest date ..... September 27, 1997
Crop/Variety ..... Rice / Cypress
Date of Flood ..... June 19 and 20, 1997

Comments: DPRE = delayed preemergence; 2-3 LF = 2-3 leaf rice; 3-4 LF = 3-4 leaf rice; +1 DAY = one day following 3-4 leaf treatments; PREFL = preflood; POFL = postflood; PI = panicle initiation. The Super Wham formulation of propanil was used.

Application type	DPRE	2-3 LF	3-4 LF	+1 DAY	PREFL	POFL	PI
Date applied	May 12, 1997	May 29, 1997	June 4, 1997	June 5, 1997	June 17, 1997	June 27, 1997	July 7, 1997
Time	5:00 pm	7:15 pm	8:30 am	9:05 am	2:30 pm	10:10 am	12:15 pm
Air/Soil temperature (F)	60 / 62	74 / 68	69 / 62	67 / 61	85 / 78	86 / 80	88 / 78
Relative humidity (%)	66	60	73	59	42	63	46
Wind (mph, direction)	4	2	3.5	4.5	4	0	2
Weather	cloudy	mostly cloudy	cloudy	mostly clear	partly cloudy	clear	mostly clear
Soil moisture	moist	moist	damp	damp	soggy	wet	wet
Crop stage/Height	N/A	1-2 lf / 2"	3 lf / 3"	3 lf / 3"	4-5 lf / 6"	5 tiller / 14"	5 tiller / 16"
Sprayer type/mph				$BkPkCO_2$ / 3			
Nozzle type/Size				Driftguard / 110015			
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	22 / 6 / 20	22 / 6 / 20	22 / 6 / 20	20 / 6 / 20	20 / 6 / 20	18 / 6 / 20
Gpa / Psi	10 / 24	10 / 26	10 / 25	10 / 26	10 / 24	10 / 22	10 / 24
Weed species (population May 29):	– – – – – – – – – – – – – – – –			(height / # leaves)	– – – – – – – – – – – – – – – –		
BRAPP (20/ft²)	N/A	3 lf / 1-2"	3 lf / 3"	4-5 lf / 3-4"	3 lf / 4"	8-10"	12"
POLLA (1/ft²)	N/A	6-8 lf / 5"	9 lf / 7"	3-4 lf / 3"	3 lf / 2.5"	N/A	12"
IPOSS (2/ft²)	N/A	coty. / 1"	3 lf / 3"	2-4 lf / 2-3"	2 lf / 3"	N/A	N/A
CYPES (1/ft²)	N/A	3-5 lf / 6-8"	5 lf / 6-8"	7-9 lf / 12-16"	17"	32-36"	N/A
SENOB (<1/ft²)	N/A	2 lf / 2"	2 lf / 2"	1-2 lf / 2"	N/A	N/A	N/A
SEBEX (<1/ft²)	N/A	2 lf / 2"	2 lf / 2"	2-3 lf / 3"	N/A	N/A	24"

Conclusions: All propanil applications at the 2- to 3-lf timing provided excellent control of the broadleaf species. A PI treatment following fenoxaprop did not provide acceptable control of the broadleaf weeds. Hemp sesbania control in these plots was especially poor. Most treatments effectively controlled broadleaf signalgrass

Table 47.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Pale smartweed (POLLA) 6/2	6/4	8/20	9/2
	(lb/A)		(%)										
Untreated check			0	0	0	0	0	0	0	0	0	0	0
Bensulfuron +	0.019												
(propanil + molinate) fb	4.5	2-3 LF											
bensulfuron +	0.019												
(propanil + molinate)	4.5	PREFL	55	86	93	95	99	100	100	84	94	100	100
Bensulfuron +	0.019												
(propanil + molinate) fb	4.5	2-3 LF											
bensulfuron +	0.028												
(propanil + molinate)	4.5	PREFL	79	83	94	100	99	100	99	98	99	100	100
Pendimethalin +	1.0												
quinclorac fb	0.188	DPRE											
bensulfuron +	0.038												
Induce (0.25%)		PREFL	99	100	100	96	100	100	100	88	0	0	0
Pendimethalin +	1.0												
quinclorac fb	0.188	DPRE											
bensulfuron +	0.047												
(propanil + molinate)	1.5	POFL	30	55	38	0	18	0	0	86	0	98	85
Pendimethalin +	1.0												
quinclorac fb	0.188	DPRE											
halosulfuron +	0.063												
Induce (0.25%)		PREFL	98	99	100	100	100	100	100	89	0	100	98
Pendimethalin +	1.0												
quinclorac fb	0.188	DPRE											
propanil +	2.0												
halosulfuron +	0.063												
Penetrator Plus (1 pt/A)		PREFL	85	93	95	100	99	100	98	90	0	100	100
Fenoxaprop fb	0.15	3-4 LF											
triclopyr +	0.25												
Induce (0.25%)		+1 DAY	0	0	20	95	100	100	100	0	0	0	0

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Pale smartweed (POLLA) 6/2	6/4	8/20	9/2
	(lb/A)		(%)										
Triclopyr +	0.19												
propanil +	3.0												
Induce (0.25%)		2-3 LF	44	76	93	73	75	81	75	98	100	100	100
Triclopyr +	0.19												
propanil +	4.0												
Induce (0.25%)		2-3 LF	59	91	100	88	98	100	91	100	100	100	100
Triclopyr +	0.19												
(propanil + molinate)	4.5	2-3 LF	65	83	95	90	94	99	86	99	100	100	100
Triclopyr +	0.19												
(propanil + molinate)	6.0	2-3 LF	78	90	98	99	94	94	85	100	100	100	100
Triclopyr +	0.25												
propanil +	3.0												
Induce (0.25%)		3-4 LF	0	0	96	100	100	100	99	0	0	100	100
Triclopyr +	0.25												
propanil +	4.0												
Induce (0.25%)		3-4 LF	0	0	98	100	100	100	99	0	0	100	100
Triclopyr +	0.19												
propanil +	3.0												
Induce (0.25%) fb		2-3 LF											
triclopyr +	0.25												
propanil +	1.0												
Induce (0.25%)		PI	71	91	100	93	99	99	98	100	100	100	100
Triclopyr +	0.25												
propanil fb	4.0	3-4 LF											
triclopyr +	0.25												
propanil +	1.0												
Induce (0.25%)		PI	0	0	95	79	100	100	99	0	0	100	100
Fenoxaprop fb	0.15	3-4 LF											
triclopyr +	0.25												
Induce (0.25%)		PI	0	0	35	98	100	100	100	0	0	45	86

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Weed control: Broadleaf signalgrass (BRAPP) 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Pale smartweed (POLLA) 6/2	6/4	8/20	9/2
	(lb/A)		(%)										
Fenoxaprop fb triclopyr + Induce (0.25%)	0.15 + 0.38	3-4 LF fb PI	0	0	40	100	100	100	100	0	0	88	85
Fenoxaprop fb triclopyr + propanil + Induce (0.25%)	0.15 + 0.25 + 1.0	3-4 LF fb PI	0	0	45	98	100	100	100	0	0	70	78
Fenoxaprop fb triclopyr + propanil + Induce (0.25%)	0.15 + 0.38 + 1.0	3-4 LF fb PI	0	0	28	95	100	100	100	0	0	88	90
Fenoxaprop fb triclopyr + (propanil + molinate)	0.15 + 0.25 + 1.5	3-4 LF fb PI	0	0	30	96	100	100	100	0	0	88	85
Fenoxaprop fb triclopyr + (propanil + molinate)	0.14 + 0.38 + 1.5	3-4 LF fb PI	0	0	35	100	100	100	100	0	0	98	90
Fenoxaprop fb 2,4-D	0.15 + 0.95	PI	0	0	28	96	100	100	100	0	0	100	94
Propanil + Penetrator Plus (1 pt/A)	3.0	2-3 LF	50	80	91	89	90	98	84	96	91	88	98
Propanil + Penetrator Plus (1 pt/A) fb propanil + (acifluorfen + bentazon) + Penetrator Plus (1 pt/A)	3.0 + 3.0 + 0.75	2-3 LF fb PREFL	64	90	98	100	100	100	98	100	100	100	100
LSD (0.05)			14	10	9	8	6	6	6	9	2	17	10

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/27	7/23	8/20	Sicklepod (SENOB) 6/2	6/9	Morningglory sp. (IPOSS) 6/4	6/9	Yellow nutsedge (CYPES) 6/4
	(lb/A)		(%)							
Untreated check			0	0	0	0	0	0	0	0
Bensulfuron +	0.019									
(propanil + molinate) fb	4.5	2-3 LF								
bensulfuron +	0.019									
(propanil + molinate)	4.5	PREFL	100	100	100	98	100	95	100	70
Bensulfuron +	0.019									
(propanil + molinate) fb	4.5	2-3 LF								
bensulfuron +	0.028									
(propanil + molinate)	4.5	PREFL	100	100	100	95	100	99	100	58
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
bensulfuron +	0.038									
Induce (0.25%)		PREFL	100	100	100	90	99	95	99	0
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
bensulfuron +	0.047									
(propanil + molinate)	1.5	POFL	100	100	100	0	10	58	3	0
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
halosulfuron +	0.063									
Induce (0.25%)		PREFL	100	100	100	93	96	95	98	0
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
propanil +	2.0									
halosulfuron +	0.063									
Penetrator Plus (1 pt/A)		PREFL	100	100	100	55	76	69	73	0
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
Induce (0.25%)		+1 DAY	100	100	100	0	23	0	5	0

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/27	7/23	8/20	Sicklepod (SENOB) 6/2	6/9	Morningglory sp. (IPOSS) 6/4	6/9	Yellow nutsedge (CYPES) 6/4
	(lb/A)		(%)							
Triclopyr + propanil + Induce (0.25%)	0.19 + 3.0	2-3 LF	100	100	95	90	100	100	100	59
Triclopyr + propanil + Induce (0.25%)	0.19 + 4.0	2-3 LF	100	100	100	90	100	100	100	73
Triclopyr + (propanil + molinate)	0.19 + 4.5	2-3 LF	100	93	93	95	100	100	100	70
Triclopyr + (propanil + molinate)	0.19 + 6.0	2-3 LF	100	100	100	100	100	100	100	74
Triclopyr + propanil + Induce (0.25%)	0.25 + 3.0	3-4 LF	100	100	100	0	100	0	100	0
Triclopyr + propanil + Induce (0.25%)	0.25 + 4.0	3-4 LF	100	100	100	0	100	0	100	0
Triclopyr + propanil + Induce (0.25%) fb triclopyr + propanil + Induce (0.25%)	0.19 + 3.0 + 0.25 + 1.0	2-3 LF fb PI	95	100	100	86	100	100	100	71
Triclopyr + propanil fb triclopyr + propanil + Induce (0.25%)	0.25 + 4.0 + 0.25 + 1.0	3-4 LF fb PI	100	100	100	0	100	0	100	0
Fenoxaprop fb triclopyr + Induce (0.25%)	0.15 + 0.25	3-4 LF fb PI25	68	58	0	10	0	0	0	

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Weed control: Hemp sesbania (SEBEX) 6/27	7/23	8/20	Sicklepod (SENOB) 6/2	6/9	Morningglory sp. (IPOSS) 6/4	6/9	Yellow nutsedge (CYPES) 6/4
	(lb/A)		– – – – – – – – – – – – – – – – (%) – – – – – – – – – – – – – – – –							
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.38									
Induce (0.25%)		PI	93	100	100	0	11	0	0	0
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
propanil +	1.0									
Induce (0.25%)		PI	0	88	95	0	10	0	0	0
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.38									
propanil +	1.0									
Induce (0.25%)		PI	0	95	90	0	5	0	0	0
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
(propanil + molinate)	1.5	PI	0	100	95	0	10	0	0	0
Fenoxaprop fb	0.14	3-4 LF								
triclopyr +	0.38									
(propanil + molinate)	1.5	PI	0	100	93	0	13	0	0	0
Fenoxaprop fb	0.15									
2,4-D	0.95	PI	0	100	95	0	13	0	0	0
Propanil +	3.0									
Penetrator Plus (1 pt/A)		2-3 LF	100	100	93	81	100	95	96	45
Propanil +	3.0									
Penetrator Plus (1 pt/A) fb		2-3 LF								
propanil +	3.0									
(acifluorfen + bentazon)	0.75									
+ Penetrator Plus (1 pt/A)		PREFL	100	100	100	86	100	100	100	63
LSD (0.05)			15	11	17	15	14	14	14	9

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Rice injury 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Rice yield
	(lb/A)					(%)				(lb/A)
Untreated check			0	0	0	0	0	0	0	6255
Bensulfuron +	0.019									
(propanil + molinate) fb	4.5	2-3 LF								
bensulfuron +	0.019									
(propanil + molinate)	4.5	PREFL	6	8	0	0	0	0	0	6300
Bensulfuron +	0.019									
(propanil + molinate) fb	4.5	2-3 LF								
bensulfuron +	0.028									
(propanil + molinate)	4.5	PREFL	0	0	0	3	0	0	0	6390
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
bensulfuron +	0.038									
Induce (0.25%)		PREFL	0	0	0	0	0	0	0	6615
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
bensulfuron +	0.047									
(propanil + molinate)	1.5	POFL	0	0	0	0	0	0	0	6885
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
halosulfuron +	0.063									
Induce (0.25%)		PREFL	0	9	0	9	5	3	3	6435
Pendimethalin +	1.0									
quinclorac fb	0.188	DPRE								
propanil +	2.0									
halosulfuron +	0.063									
Penetrator Plus (1 pt/A)		PREFL	0	0	0	3	0	3	0	6435
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
Induce (0.25%)		+1 DAY	0	0	0	41	4	8	15	6075
Triclopyr +	0.19									
propanil +	3.0									
Induce (0.25%)		2-3 LF	8	10	1	3	0	0	0	6660

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Rice injury 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Rice yield
	(lb/A)					(%)				(lb/A)
Triclopyr +	0.19									
propanil +	4.0									
Induce (0.25%)		2-3 LF	16	19	4	6	3	3	1	6795
Triclopyr +	0.19									
(propanil + molinate)	4.5	2-3 LF	8	0	0	0	0	0	0	6525
Triclopyr +	0.19									
(propanil + molinate)	6.0	2-3 LF	11	5	0	0	0	0	0	7200
Triclopyr +	0.25									
propanil +	3.0									
Induce (0.25%)		3-4 LF	0	0	10	6	4	5	3	5400
Triclopyr +	0.25									
propanil +	4.0									
Induce (0.25%)		3-4 LF	0	0	9	11	5	5	3	7155
Triclopyr +	0.19									
propanil +	3.0									
Induce (0.25%) fb		2-3 LF								
triclopyr +	0.25									
propanil +	1.0									
Induce (0.25%)		PI	10	10	1	15	0	5	0	5625
Triclopyr +	0.25									
propanil fb	4.0	3-4 LF								
triclopyr +	0.25									
propanil +	1.0									
Induce (0.25%)		PI	0	0	4	0	0	0	0	6750
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
Induce (0.25%)		PI	0	0	0	38	20	14	14	6660
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.38									
Induce (0.25%)		PI	0	0	0	35	14	11	18	6660

continued

Table 47. Continued.

Herbicide	Rate	Application timing	Rice injury 6/2	6/4	6/9	6/27	7/23	8/20	9/2	Rice yield
	(lb/A)					(%)				(lb/A)
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
propanil +	1.0									
Induce (0.25%)		PI	0	0	0	41	21	13	19	6480
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.38									
propanil +	1.0									
Induce (0.25%)		PI	0	0	0	30	10	10	15	6525
Fenoxaprop fb	0.15	3-4 LF								
triclopyr +	0.25									
(propanil + molinate)	1.5	PI	0	0	0	54	26	16	26	5805
Fenoxaprop fb	0.14	3-4 LF								
triclopyr +	0.38									
(propanil + molinate)	1.5	PI	0	0	0	53	31	13	23	6210
Fenoxaprop fb	0.15									
2,4-D	0.95	PI	0	0	0	31	10	10	11	5985
Propanil +	3.0									
Penetrator Plus (1 pt/A)		2-3 LF	0	3	0	0	0	0	0	6480
Propanil +	3.0									
Penetrator Plus (1 pt/A) fb		2-3 LF								
propanil +	3.0									
(acifluorfen + bentazon)	0.75									
+ Penetrator Plus (1 pt/A)		PREFL	10	10	1	0	0	0	0	6120
LSD (0.05)			5	8	2	17	10	6	7	NS

Table 48. Yellow nutsedge control in rice, Lodge Corner.

TEST INFORMATION

Location ..... Lodge Corner
Experimental Design / replications ..... RCB / 4
Plot size ..... 10 ft by 20 ft
Row width / Number of rows per plot ..... 7.5 in / 16 rows
Soil type ..... Silt loam (2% sand, 86% silt, 12% clay)
% OM / pH ..... 1.2 / 5.2

Planting date ..... May 7, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice / Kaybonnet
Date of Flood ..... June 11, 1997

Comments: DPRE = delayed preemergence; 2-3 LF = 2-3 leaf rice; PREFL = preflood; POFL = postflood.

Application type	DPRE	2-3 LF	PREFL	POFL
Date applied	May 7, 1997	May 29, 1997	June 6, 1997	June 13, 1997
Time	11:30 am	1:30 pm	11:50 am	9:45 am
Air / Soil temperature (F)	71 / 68	77 / 65	79 / 67	78 / 65
Relative humidity (%)	42	33	30	75
Wind (mph, direction)	3.5	4	3.5	6
Weather	mostly clear	clear	partly cloudy	cloudy
Soil moisture	moist	damp	soggy	wet
Crop stage / Height	N/A	2-3 lf / 3"	3 lf / 4"	4 lf / 6"
Sprayer type / mph		BkPkCO_2 / 3		
Nozzle type / Size		Driftguard / 110015		
Boom ht / # Noz / Spacing (in.)	18 / 6 / 20	20 / 6 / 20	20 / 6 / 20	20 / 6 / 20
Gpa / Psi	10 / 22	10 / 23	10 / 27	10 / 22
Weed species (population):	– – – – – – – – – – – – – (height / # leaves) – – – – – – – – – – – – –			
CYPES (1 to 7 / ft^2)	2 lf / 3"	4 lf / 9"	8 lf / 10"	2 lf / 3"
ECHCG (0; DPRE control)	N/A	N/A	N/A	N/A
IPOSS (<1 / ft^2)	2 lf / 3"	N/A	N/A	2 lf / 3"

Conclusions: Halosulfuron continues to provide excellent yellow nutsedge control regardless of timing of application or water management. The preflood standard treatments of bensulfuron were also effective.

Table 48.

Herbicide	Rate	Application timing	Weed control: Yellow nutsedge (CYPES) 5/29	6/5	7/2	7/18	Barnyardgrass (ECHCG) 5/29	Smartweed sp. (IPOSS) 6/5	Rice injury 5/29	6/5	7/2	7/18
	(lb/A)		(%)									
Untreated check			0	0	0	0	0	0	0	0	0	0
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.047											
Induce (0.25%)		2-3 LF	0	40	100	100	100	100	0	3	8	6
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.063											
Induce (0.25%)		2-3 LF	0	43	98	100	100	100	0	3	9	6
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.063											
Induce (0.25)		PREFL	0	4	96	100	100	100	0	0	8	3
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.094											
Induce (0.25%)		PREFL	0	0	98	100	100	100	0	0	10	11
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.047											
Induce (0.25%)		POFL	0	0	94	100	100	100	0	0	23	10
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.063											
Induce (0.25%)		POFL	0	0	94	100	100	100	0	0	18	5
Pendimethalin +	1.0											
quinclorac fb	0.25	DPRE										
halosulfuron +	0.094											
Induce (0.25%)		POFL	0	0	90	100	100	100	0	0	16	16

continued

Table 48. Continued.

Herbicide	Rate	Application timing	Weed control: Yellow nutsedge (CYPES) 5/29	6/5	7/2	7/18	Barnyardgrass (ECHCG) 5/29	Smartweed sp. (IPOSS) 6/5	Rice injury 5/29	6/5	7/2	7/18
	(lb/A)		(%)									
Pendimethalin + quinclorac fb halosulfuron + propanil (Stam M4)	1.0 + 0.25 + 0.063 + 3.0	PREFL	0	0	100	100	100	100	0	0	4	0
Pendimethalin + quinclorac fb halosulfuron + propanil (Super Wham + Penetrator Plus (1 pt/A)	1.0 + 0.25 + 0.063 + 3.0	PREFL	0	0	100	100	100	100	0	0	16	13
Pendimethalin + quinclorac fb halosulfuron + (propanil + molinate)	1.0 + 0.25 + 0.063 + 4.5	PREFL	0	0	100	100	100	100	0	0	13	8
Pendimethalin + quinclorac fb propanil (Stam M4) + bensulfuron	1.0 + 0.25 + 3.0 + 0.038	PREFL	0	0	93	100	100	100	0	0	10	4
Pendimethalin + quinclorac fb propanil (Super Wham) + bensulfuron + Penetrator Plus (1 pt/A)	1.0 + 0.25 + 3.0 + 0.038	PREFL	0	0	86	90	100	100	0	0	6	3
Pendimethalin + quinclorac fb (propanil + molinate) + bensulfuron	1.0 + 0.25 + 4.5 + 0.038	PREFL	0	0	98	100	100	100	0	0	6	0
Pendimethalin + quinclorac fb (propanil + molinate) + bensulfuron	1.0 + 0.25 + 1.5 + 0.047	POFL	0	0	50	64	100	100	0	0	6	0

continued

Table 48. Continued.

Herbicide	Rate	Application timing	Weed control: Yellow nutsedge (CYPES) 5/29	6/5	7/2	7/18	Barnyardgrass (ECHCG) 5/29	Smartweed sp. (IPOSS) 6/5	Rice injury 5/29	6/5	7/2	7/18
	(lb/A)		(%)									
(Propanil + molinate) + bensulfuron fb (propanil + molinate) + bensulfuron	4.5 0.019 4.5 0.019	2-3 LF PREFL	0	48	99	98	100	100	0	0	13	5
(Propanil + molinate) + halosulfuron fb (propanil + molinate) + halosulfuron	4.5 0.031 4.5 0.031	2-3 LF PREFL	0	60	100	100	100	100	0	6	15	3
Pendimethalin + quinclorac F8426-2 + AG-98 (0.25%)	1.0 0.25 0.02	DPRE PREFL	0	0	0	0	100	100	0	0	0	0
Clomazone (3ME) + sulfentrazone	0.4 0.2	DPRE	93	88	93	100	100	100	25	20	26	16
LSD (0.05)			1	10	10	6	1	1	2	5	NS	11

Table 49. Potential synergistic effects of herbicides and insecticides with propanil (seven experiments), Fayetteville.

TEST INFORMATION

Location ..... Fayetteville
Experimental Design / replications ..... Factorial on a RCB / 4
Plot size ..... 3.3 ft by 6.6 ft
Row width / Number of rows per plot ..... 10 in / 3 rows
Soil type ..... Taloka silt loam (27% sand, 64% silt, 9% clay)
% OM / pH ..... 1.1 / 5.6

Planting date ..... May 23, 1997
Harvest date ..... N/A
Crop/Variety ..... Rice/Kaybonnet
Date of Flood ..... N/A

Comments: One row of resistant barnyardgrass, one row of susceptible barnyardgrass, and one row of rice were planted in each plot. EPOST = early postemergence.

Application type	EPOST
Date applied	June 11, 1997
Time	3:00 pm
Incorporation equipment	N/A
Air/Soil temperature (F)	85 / 80
Relative humidity (%)	85
Wind (mph, direction)	3
Weather	50% cloudy
Soil moisture	moist
Crop stage/Height	2-3 lf / 1.5"
Sprayer type/mph	BkPkCO_2 / 3.0
Nozzle type/Size	8004-E
Boom ht / # Noz	18 / 1
Gpa / Psi	20 / 20
Weed species	**no. leaves**
ECHCG	2

Conclusions: ***Test 1:*** Rice injury occurred (>20%) when anilophos at 2.7 lb/A was applied. Good control was achieved with several rate combinations with minimal rice injury. ***Test 2:*** Good barnyardgrass control was achieved with all rates of carbaryl in combination with propanil at $3, 0 lb/A, although some rice injury occurred. ***Test 3:*** All rate combinations of propanil and molinate gave very good control (>85%) at 7 DAT, but regrowth occurred because of the lack of a permanent flood. ***Test 4:*** The higher rate combinations of propanil and pendimethalin were needed to obtain acceptable control of resistant and susceptible barnyardgrass, and little injury occurred. ***Test 5:*** Good control was obtained with propanil at $3,0 lb/A in combination with all rates of piperophos. ***Test 6:*** High rate combinations of propanil and quinclorac were required for adequate control of barnyardgrass, but no injury occurred with any combination. ***Test 7:*** Fair control was obtained with high rate combinations of propanil and thiobencarb with little injury.

Table 49. Test 1. Propanil plus anilophos.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		0	0	0	0	0	0
Anilophos	0.1	0	0	0	0	0	0
Anilophos	0.3	4	19	3	16	0	0
Anilophos	0.9	5	58	7	60	0	0
Anilophos	2.7	45	91	43	95	0	24
Propanil	0.74	32	32	32	32	0	0
Propanil + anilophos	0.74 + 0.1	44	39	41	41	0	0
Propanil + anilophos	0.74 + 0.3	71	71	69	71	0	0
Propanil + anilophos	0.74 + 0.9	66	71	65	66	0	0
Propanil + anilophos	0.74 + 2.7	86	97	83	97	3	34
Propanil	1.5	69	58	69	64	0	0
Propanil + anilophos	1.5 + 0.1	75	74	71	73	0	0
Propanil + anilophos	1.5 + 0.3	83	83	78	76	0	1
Propanil + anilophos	1.5 + 0.9	81	84	79	85	0	0
Propanil + anilophos	1.5 + 2.7	84	95	83	95	4	28
Propanil	3.0	85	78	82	75	2	2
Propanil + anilophos	3.0 + 0.1	85	78	84	81	1	0
Propanil + anilophos	3.0 + 0.3	91	84	93	85	1	0
Propanil + anilophos	3.0 + 0.9	96	95	94	95	5	1
Propanil + anilophos	3.0 + 2.7	96	95	96	95	5	20
Propanil	6.0	97	91	98	95	5	0
Propanil + anilophos	6.0 + 0.1	97	93	97	94	4	0
Propanil + anilophos	6.0 + 0.3	99	96	98	96	5	0
Propanil + anilophos	6.0 + 0.9	98	97	98	97	5	1
Propanil + anilophos	6.0 + 2.7	100	98	100	98	5	2
LSD (0.05)		13	21	14	21	2	11

continued

Table 49. Continued. Test 2. Propanil plus carbaryl.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		0	0	0	0	0	0
Carbaryl	0.09	0	0	0	0	0	0
Carbaryl	0.3	3	3	5	5	0	0
Carbaryl	0.9	3	3	3	3	3	3
Carbaryl	2.7	19	19	21	19	3	3
Propanil	0.74	73	68	75	69	5	4
Propanil + carbaryl	0.74 + 0.09	74	68	71	66	5	5
Propanil + carbaryl	0.74 + 0.3	74	68	74	66	6	5
Propanil + carbaryl	0.74 + 0.9	83	70	83	71	8	5
Propanil + carbaryl	0.74 + 2.7	77	70	73	67	8	8
Propanil	1.5	81	71	80	71	5	5
Propanil + carbaryl	1.5 + 0.09	74	74	76	71	5	5
Propanil + carbaryl	1.5 + 0.3	88	75	91	81	11	8
Propanil + carbaryl	1.5 + 0.9	84	74	79	78	10	6
Propanil + carbaryl	1.5 + 2.7	84	79	85	81	13	10
Propanil	3.0	89	80	85	79	8	6
Propanil + carbaryl	3.0 + 0.09	89	83	90	85	8	6
Propanil + carbaryl	3.0 + 0.3	97	84	97	85	18	14
Propanil + carbaryl	3.0 + 0.9	89	84	89	85	16	11
Propanil + carbaryl	3.0 + 2.7	97	86	97	89	19	13
Propanil	6.0	94	84	94	85	14	13
Propanil + carbaryl	6.0 + 0.09	95	83	96	85	13	10
Propanil + carbaryl	6.0 + 0.3	97	90	97	93	29	28
Propanil + carbaryl	6.0 + 0.9	97	88	97	91	21	11
Propanil + carbaryl	6.0 + 2.7	97	86	97	91	39	33
LSD (0.05)		13	13	13	13	5	6

continued

Table 49. Continued. Test 3. Propanil plus molinate.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		46	0	46	0	0	0
Molinate	0.3	29	3	40	3	0	0
Molinate	1.0	91	43	88	52	0	0
Molinate	3.0	95	50	80	58	0	1
Molinate	8.8	91	66	86	69	1	0
Propanil	0.74	91	70	91	75	0	0
Propanil + molinate	0.74 + 0.3	99	74	100	78	0	0
Propanil + molinate	0.74 + 1.0	85	61	86	69	1	1
Propanil + molinate	0.74 + 3.0	100	71	100	78	1	4
Propanil + molinate	0.74 + 8.8	100	83	100	85	10	3
Propanil + molinate	1.5	78	56	95	71	4	3
Propanil + molinate	1.5 + 0.3	98	73	100	78	4	4
Propanil + molinate	1.5 + 1.0	97	73	100	79	3	3
Propanil + molinate	1.5 + 3.0	100	75	100	80	5	4
Propanil + molinate	1.5 + 8.8	100	74	100	79	8	8
Propanil	3.0	98	74	99	81	4	4
Propanil + molinate	3.0 + 0.3	97	73	100	79	5	5
Propanil + molinate	3.0 + 1.0	100	75	100	79	4	3
Propanil + molinate	3.0 + 3.0	100	78	100	84	11	5
Propanil + molinate	3.0 + 8.8	100	83	100	88	14	8
Propanil	6.0	100	79	100	85	16	10
Propanil + molinate	6.0 + 0.3	100	79	100	85	15	8
Propanil + molinate	6.0 + 1.0	100	81	100	84	14	9
Propanil + molinate	6.0 + 3.0	100	83	100	93	20	10
Propanil + molinate	6.0 + 8.8	100	85	100	88	24	11
LSD (0.05)		24	17	22	12	7	4

continued

Table 49. Continued. Test 4. Propanil plus pendimethalin.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		0	0	0	0	0	0
Pendimethalin	0.1	0	0	0	0	0	0
Pendimethalin	0.3	0	0	0	0	0	0
Pendimethalin	0.9	0	20	0	18	0	0
Pendimethalin	2.7	16	24	16	24	0	0
Propanil	0.74	43	41	50	48	0	0
Propanil + pendimethalin	0.74 + 0.1	58	58	60	58	0	0
Propanil + pendimethalin	0.74 + 0.3	65	65	65	63	0	0
Propanil + pendimethalin	0.74 + 0.9	19	24	19	24	0	0
Propanil + pendimethalin	0.74 + 2.7	70	84	69	85	0	0
Propanil	1.5	65	60	69	63	0	0
Propanil + pendimethalin	1.5 + 0.1	61	56	65	61	0	0
Propanil + pendimethalin	1.5 + 0.3	74	73	76	73	0	0
Propanil + pendimethalin	1.5 + 0.9	69	74	71	76	0	0
Propanil + pendimethalin	1.5 + 2.7	76	86	78	88	0	0
Propanil	3.0	64	56	69	64	0	0
Propanil + pendimethalin	3.0 + 0.1	70	64	75	71	1	1
Propanil + pendimethalin	3.0 + 0.3	79	75	78	75	0	0
Propanil + pendimethalin	3.0 + 0.9	75	77	78	80	0	0
Propanil + pendimethalin	3.0 + 2.7	79	89	78	88	4	4
Propanil	6.0	78	69	84	76	5	5
Propanil + pendimethalin	6.0 + 0.1	79	79	83	83	4	3
Propanil + pendimethalin	6.0 + 0.3	84	86	89	89	5	4
Propanil + pendimethalin	6.0 + 0.9	90	89	91	93	4	3
Propanil + pendimethalin	6.0 + 2.7	96	97	94	97	5	4
LSD (0.05)		18	25	17	24	1	2

continued

Table 49. Continued. Test 5. Propanil plus piperophos.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		0	0	0	0	0	0
Piperophos	0.1	0	0	1	0	0	0
Piperophos	0.3	4	4	11	10	0	0
Piperophos	0.9	4	9	13	20	0	0
Piperophos	2.7	7	78	17	78	0	17
Propanil	0.74	69	61	75	68	0	0
Propanil + piperophos	0.74 + 0.1	70	56	73	55	0	0
Propanil + piperophos	0.74 + 0.3	76	71	78	73	0	1
Propanil + piperophos	0.74 + 0.9	80	80	83	83	0	0
Propanil + piperophos	0.74 + 2.7	72	76	70	75	1	11
Propanil	1.5	76	71	80	75	0	0
Propanil + piperophos	1.5 + 0.1	79	71	78	68	0	0
Propanil + piperophos	1.5 + 0.3	73	68	75	68	2	2
Propanil + piperophos	1.5 + 0.9	75	76	73	71	1	1
Propanil + piperophos	1.5 + 2.7	91	97	90	95	5	20
Propanil	3.0	90	85	86	83	3	1
Propanil + piperophos	3.0 + 0.1	89	86	88	88	1	1
Propanil + piperophos	3.0 + 0.3	89	86	88	85	5	5
Propanil + piperophos	3.0 + 0.9	94	95	90	91	4	4
Propanil + piperophos	3.0 + 2.7	94	94	93	93	5	6
Propanil	6.0	96	88	96	88	5	4
Propanil + piperophos	6.0 + 0.1	97	94	96	96	5	3
Propanil + piperophos	6.0 + 0.3	97	97	97	97	5	4
Propanil + piperophos	6.0 + 0.9	97	97	97	97	5	5
Propanil + piperophos	6.0 + 2.7	97	97	97	95	5	9
LSD (0.05)		7	10	7	12	2	7

continued

Table 49. Continued. Test 6. Propanil plus quinclorac.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		0	0	0	0	0	0
Quinclorac	0.025	19	15	20	16	0	0
Quinclorac	0.074	30	24	26	25	0	0
Quinclorac	0.22	39	33	43	38	0	0
Quinclorac	0.67	31	28	35	30	0	0
Propanil	0.74	15	13	15	15	0	0
Propanil + quinclorac	0.74 + 0.025	40	33	46	40	0	0
Propanil + quinclorac	0.74 + 0.074	59	51	58	53	0	0
Propanil + quinclorac	0.74 + 0.22	68	60	69	61	0	0
Propanil + quinclorac	0.74 + 0.67	70	63	73	65	0	0
Propanil	1.5	49	45	53	49	0	0
Propanil + quinclorac	1.5 + 0.025	63	56	68	63	0	0
Propanil + quinclorac	1.5 + 0.074	70	64	70	65	0	0
Propanil + quinclorac	1.5 + 0.22	48	43	48	43	0	0
Propanil + quinclorac	1.5 + 0.67	68	61	68	63	0	0
Propanil	3.0	65	59	76	66	0	0
Propanil + quinclorac	3.0 + 0.025	70	65	76	68	0	0
Propanil + quinclorac	3.0 + 0.074	71	65	75	69	0	0
Propanil + quinclorac	3.0 + 0.22	78	73	83	77	0	0
Propanil + quinclorac	3.0 + 0.67	83	76	86	81	0	0
Propanil	6.0	78	70	80	70	0	0
Propanil + quinclorac	6.0 + 0.025	75	71	80	75	0	0
Propanil + quinclorac	6.0 + 0.074	86	81	90	86	0	0
Propanil + quinclorac	6.0 + 0.22	82	78	87	81	0	0
Propanil + quinclorac	6.0 + 0.67	95	94	95	94	0	0
LSD (0.05)		23	21	22	23	NS	NS

continued

Table 49. Continued. Test 7. Propanil plus thiobencarb.

Treatment	Rate	Barnyardgrass (ECHCG) control				Rice injury	
		Resistant		Susceptible			
		6/17	7/2	6/17	7/2	6/17	7/2
	(lb/A)	(%)					
Untreated check		23	20	23	20	0	0
Thiobencarb	0.3	26	26	28	28	1	1
Thiobencarb	1.0	39	39	48	48	0	0
Thiobencarb	3.0	66	69	64	71	3	3
Thiobencarb	8.8	65	73	71	78	1	1
Propanil	0.74	74	79	76	81	3	3
Propanil + thiobencarb	0.74 + 0.3	87	88	88	88	5	5
Propanil + thiobencarb	0.74 + 1.0	77	76	80	80	3	3
Propanil + thiobencarb	0.74 + 3.0	69	71	76	75	4	4
Propanil + thiobencarb	0.74 + 8.8	44	45	51	51	3	3
Propanil + thiobencarb	1.5	73	76	71	79	3	3
Propanil + thiobencarb	1.5 + 0.3	78	78	81	83	5	5
Propanil + thiobencarb	1.5 + 1.0	49	69	49	70	1	1
Propanil + thiobencarb	1.5 + 3.0	78	76	81	83	4	3
Propanil + thiobencarb	1.5 + 8.8	71	78	76	80	1	1
Propanil	3.0	36	38	40	40	1	1
Propanil + thiobencarb	3.0 + 0.3	86	86	89	89	5	5
Propanil + thiobencarb	3.0 + 1.0	69	79	74	81	3	3
Propanil + thiobencarb	3.0 + 3.0	74	79	78	80	3	3
Propanil + thiobencarb	3.0 + 8.8	77	78	82	82	4	4
Propanil	6.0	83	81	83	81	3	4
Propanil + thiobencarb	6.0 + 0.3	73	69	78	70	3	3
Propanil + thiobencarb	6.0 + 1.0	74	71	80	75	5	5
Propanil + thiobencarb	6.0 + 3.0	66	76	73	82	3	2
Propanil + thiobencarb	6.0 + 8.8	79	84	81	86	3	4
LSD (0.05)		32	33	32	33	3	3

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
AC-166,746	— (4 CS)	Cyanamid	—
AC-166-747	— (4 CS)	Cyanamid	—
AC-166-773	— (4 CS)	Cyanamid	—
AC-513,981	— (4 CS)	Cyanamid	—
AC-513,982	— (4 CS)	Cyanamid	—
acifluorfen + bentazon	Storm (4 SL)	BASF	5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoic acid; see bentazon
Activator 90 (surfactant)	—	UAP	—
Agri-Dex (crop oil)	Agri-Dex	Helena	—
anilophos or anilofos	— (2.5 EC)	AgrEvo	*S*-[2-[(4-chlorophenyl)(1-methylethyl)amino]-2-oxoethyl] *O,O*-dimethyl phosphorodithioate
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*H*)-2,1,3-benzothiadiazin-4(3*H*)-one 2,2-dioxide
carbaryl (insecticide)	Sevin (4 F)	Rhone-Poulenc	1-naphthalenyl methylcarbamate
clethodim	Select (2 EC)	Valent	(*E,E*)-(+)-2-[1-[[(3-chloro-2-propenyl)oxy]imino] propyl]-5[2-(ethylthio)propyl]-3-hydroxy-2-cyclohexen-1-one
clomazone	Command (4 EC; 3 ME; 3 G)	FMC	2-[(2-chlorophenyl)methyl]-4,4-dimethyl-3-isoxazolidinone
F-8426 (carfentrazone)	Shark (40 DF; -2 formulation)	FMC	*N*-[2,4-dichloro-5-(4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1*H*-1,2,4-triazol)-1-ylphenyl]-methanesulfonamide
fenoxaprop	Whip 1EC; Whip 360 (0.57 EC) Bugle (0.67 EC)	AgrEvo	(+)-2-[4-[(6-chloro-2-benzoxazolyl)oxy]phenoxy] propanoic acid
fipronil (insecticide)	[EXP 80698A]	Rhone-Poulenc	(+)-5-amino-1-[2,6-dichloro-4-(trifluoromethyl) phenyl]-4-[(trifluoromethyl)sulfinyl]-1*H*-pyrazole-3-carbonitrile
fluazifop-P	Fusilade (2 EC)	Zeneca	(*R*)-2-[4-[[5-(trifluoromethyl)-2-pyridinyl]oxy] phenoxy]propanoic acid

continued

Appendix Table 1. Continued.

Common name	Trade name (formulation[y])	Company	Chemical name
fluazifop + fenoxaprop	Fusion (2.66 EC)	Zeneca	(see individual components)
glufosinate	Liberty (1.67 EC)	AgrEvo	2-amino-4-(hydroxymethylphosphinyl)butanoic acid
glyphosate	Roundup Ultra (4 SL)	Monsanto	*N*-(phosphonomethyl)glycine
halosulfuron	Permit (75 DF)	Monsanto	3-chloro-5-[[[[(4,6-dimethoxy-2-pyrimidinyl)amino] carbonyl]amino]-sulfonyl]-1-methyl-1*H*-pyrazole-4-carboxylic acid
HOE-122006 (Whip safener)	— (0.83 EC)	AgrEvo	—
Induce (surfactant)	Induce	Helena	—
imazethapyr	Pursuit (2 EC, 70 WG)	Cyanamid	2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-5-ethyl-3-pyridinecarboxylic acid
Kinetic (surfactant)	Kinetic	Helena	—
LGC-40863	— (0.083 EC)	LG Chemical (Korea)	benzophenone-0-[2,6-bis[(4,6-dimethoxy-2-pyrimidinyl)oxy]benxoyl]oxime
metolachlor	Dual (8 EC)	Novartis	2-chloro-*N*-(2-ethyl-6-methylphenyl)-*N*-(2-methoxy-1-methylethyl)acetamide
molinate	Ordram (15 G)	Zeneca	*S*-ethyl hexahydro-1*H*-azepine-1-carbothioate
pendimethalin	Prowl (3.3 EC); Pentagon (60 DF)	Cyanamid	*N*-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine
Penetrator Plus (crop oil / surfactant)	Penetrator Plus	Helena	—
piperophos	— (4, 17 EC)	Novartis	*S*-[2-(2-methyl-1-piperidinyl)-2-oxoethyl] *O*,*O*-dipropyl phosphorodithioate
propanil	Stam 4M (4 EC); Stam 80DF; Super Wham (4 EC)	Rohm & Haas; Cedar	*N*-(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
quizalofop	Assure II (0.88 EC)	DuPont	(+)-2-[4-[(6-chloro-2-quinoxalinyl)oxy]phenoxy] propanoic acid

continued

Appendix Table 1. Continued.

Common name	Trade name (formulation[y])	Company	Chemical name
SAN-582 (dimethenamid)	Frontier (7.5 EC)	BASF	2-chloro-*N*-[(1-methyl-2-methoxy)ethyl]-*N*-(2,4-dimethyl-thien-3-yl)acetamide
sulfentrazone	Authority (75 DF)	FMC	*N*-[2,4-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1*H*-1,2,4-triazol-1-yl]phenyl]methanesulfonamide
thiobencarb	Bolero (8 EC; 10 G)	Valent	*S*-[(4-chlorophenyl)methyl]diethylcarbamothioate
triclopyr	Grandstand (3 SL)	DowElanco	[(3,5,6-trichloro-pyridinyl)oxy]acetic acid
2,4-D	Weedar 64 (3.8 SL); Hi-Dep (3.8 SL)	Rhone-Poulenc; UAP	(2,4-dichlorophenoxy)acetic acid
V10029	— (80 WP)	Valent	—

[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 = wettable powder; SL = soluble liquid; F = flowable.

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

Common name	Bayer code[z]	Scientific Name
Barnyardgrass	ECHCG	*Echinochloa crus-galli* (L.) Beauv.
Broadleaf signalgrass	BRAPP	*Brachiaria platyphylla* (Griseb.) Nash.
Common purslane	POROL	*Portulaca oleracea* L.
Ducksalad	HETLI	*Heteranthera limosa* (Sw.) Willd.
Eclipta	ECLAL	*Eclipta prostrata* L.
Hemp sesbania	SEBEX	*Sesbania exaltata* (Raf.) Rydb.
Morningglory species	IPOSS	*Ipomoea* spp.
Purple ammania	AMMCO	*Ammannia coccinea* Rottb.
Red rice	ORYSA	*Oryza sativa* L.
Sicklepod	SENOB	*Senna obtusifolia* L.
Smartweed species	POLSS	*Polygonum* spp.
Yellow nutsedge	CYPES	Cyperus esculentus L.

[z] WSSA-approved computer code from Composite List of Weeds, Revised 1989. WSSA, 1508 W. University Ave., Champaign, IL 61821.

Appendix Table 3. Climatological data, 1997.

Day	May Temp. Max (°F)	May Temp. Min (°F)	May Rainfall (in.)	June Temp. Max (°F)	June Temp. Min (°F)	June Rainfall (in.)	July Temp. Max (°F)	July Temp. Min (°F)	July Rainfall (in.)	August Temp. Max (°F)	August Temp. Min (°F)	August Rainfall (in.)
Fayetteville												
1	72	38		76	56		88	70		84	61	
2	74	46	0.41	73	53		91	73		88	63	
3	73	40	0.29	75	54		91	74		85	65	
4	70	52		75	57		91	67	0.32	91	69	
5	74	54		75	51		78	55		95	64	
6	78	50		76	52		80	56		88	60	
7	81	56		82	55		81	64		77	59	0.03
8	77	59	0.74	84	60		85	68		82	62	0.01
9	77	51		84	53		88	68	0.06	70	62	0.05
10	66	39		71	63	0.18	89	67	0.33	85	60	
11	68	46		76	60	0.12	83	68	0.22	89	62	
12	75	52		80	62	0.92	88	72		85	70	0.24
13	64	47		85	63	0.39	91	74		84	69	0.22
14	75	54	0.22	83	63		91	74		83	66	0.19
15	73	51		84	62		94	72	0.33	90	70	0.30
16	74	43		81	61	1.52	94	17		92	66	0.10
17	77	53		83	61	1.96	92	71		90	77	0.35
18	85	62		72	58	0.14	91	70		83	70	2.50
19	85	67		86	61		90	68		77	70	0.19
20	72	51	0.85	87	73		93	72		82	70	0.11
21	72	79		89	69		93	73		88	62	
22	73	79		89	68		94	74		83	64	0.01
23	73	52		89	70		93	72		83	59	
24	73	58		87	73		94	71		85	61	
25	74	64	0.04	89	66		95	74		85	63	
26	80	68		89	64		95	74		86	74	
27	85	63	0.39	89	68		96	74		88	63	
28	68	56		89	67		96	74		89	65	
29	70	52		80	65	0.50	98	73		89	65	
30	79	58	0.81	87	67	0.60	85	65	0.13	90	69	
31	70	51	0.52				83	63		89	69	

continued

Appendix Table 3. Continued.

Day	May Temp. Max (°F)	May Temp. Min (°F)	May Rainfall (in.)	June Temp. Max (°F)	June Temp. Min (°F)	June Rainfall (in.)	July Temp. Max (°F)	July Temp. Min (°F)	July Rainfall (in.)	August Temp. Max (°F)	August Temp. Min (°F)	August Rainfall (in.)
Lonoke (Little Rock Airport)												
1	65	47		71	47		82	62		90	61	
2	75	50		76	58	0.30	77	61		92	61	
3	78	56		71	53		84	60		96	65	
4	67	56	2.18	74	47		78	65		104	71	
5	73	59	1.48	75	51		77	58		97	62	
6	66	48		82	55		83	56		85	64	
7	61	42		80	56		90	60		77	67	
8	57	47	0.04	85	64	0.02	91	68	0.06	82	69	
9	53	42	0.01	73	56	0.61	74	67	0.12	90	70	
10	65	38		74	49		76	66	0.04	94	72	
11	63	48	0.25	78	47		80	66	0.02	96	76	0.3
12	48	37		71	48		83	62	0.06	96	80	
13	54	36		80	45		88	65	0.09	89	71	0.1
14	61	39		84	57	0.05	89	70		95	76	
15	67	44		80	58		89	68		96	81	
16	73	50		78	52		83	67	2.64	98	78	
17	66	43		88	54		84	69	0.68	85	71	
18	77	46		90	62		87	65		90	70	1.0
19	81	58		85	64	0.55	92	67		94	76	0.3
20	81	54		70	60		91	71		96	69	
21	77	58		77	58		92	75		91	64	
22	61	51	0.51	75	53		94	72		78	57	
23	62	49	0.58	83	55		94	73		95	61	0.02
24	66	45		82	66	0.42	96	71		94	60	
25	64	52	0.53	85	66		91	73		96	62	
26	56	51	0.71	89	72	0.22	94	71	0.51	98	65	
27	62	52	0.68	88	65	0.52	94	75		101	65	
28	64	50	0.76	77	66	0.76	92	70	0.86	101	68	
29	74	50		81	58		87	69	0.31	103	69	
30	82	57		82	63	0.47	92	76	0.02	101	73	
31				80	63					99	71	

continued

Appendix Table 3. Continued.

	May			June			July			August		
	Temp.		Rain-	Temp.		Rain-	Temp.		Rain-	Temp.		Rain-
Day	Max	Min	fall	Max	Min	fall	Max	Min	fall	Max	Min	fall
	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)
Rohwer												
1	83	49		74	58		92	74		86	69	
2	75	53		79	63		94	73		85	60	
3	72	54	0.62	75	58		94	74		87	63	
4	70	47		82	60		92	74		90	67	
5	72	52		77	61		95	66		94	68	
6	73	54		80	59		83	64		91	63	
7	83	59		84	58		85	71		85	64	
8	82	62		87	64		90	70		77	64	
9	82	57	0.61	91	69		93	68		72	64	0.20
10	83	50		81	67	1.75	93	71		83	69	0.25
11	75	48		79	68	0.12	92	72		91	73	
12	78	52		80	64		94	74		91	73	0.39
13	74	44		85	68	0.33	96	76		93	74	
14	79	47		88	70		95	71		92	70	0.11
15	85	52		89	68		94	69	0.23	93	71	
16	79	55		86	73		92	70		94	73	
17	80	53		90	67	3.25	93	73	0.02	94	74	
18	89	61		85	67	0.27	94	72		93	73	
19	90	68		86	67		94	73		91	70	
20	89	63	0.92	92	71		93	72		94	71	0.02
21	76	58	0.06	93	72		94	73		90	66	
22	74	56	0.18	93	73		96	74		86	63	
23	75	58		93	73		97	72	0.39	80	59	
24	84	60		96	74		96	74		85	59	
25	86	61	1.24	95	72		97	75		86	57	
26	80	71		91	70	1.01	93	75		88	60	
27	83	64	0.81	92	71		99	77		92	63	
28	88	65	3.21	95	67		100	76		92	64	
29	78	63	0.28	93	68	2.28	98	76		94	64	
30	80	63		88	70	1.21	98	71	0.85	95	66	
31	85	62	0.51				85	68		96	72	

continued

Appendix Table 3. Continued.

	May			June			July			August		
	Temp.		Rain-	Temp.		Rain-	Temp.		Rain-	Temp.		Rain-
Day	Max	Min	fall	Max	Min	fall	Max	Min	fall	Max	Min	fall
	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)	(°F)	(°F)	(in.)
Stuttgart												
1	83	48		79	58		89	76		88	69	
2	72	52	0.02	78	59		94	76		88	64	
3	73	53	0.26	73	60		95	77		88	62	
4	73	48		82	61		96	77		90	69	
5	72	46		74	59		88	65		95	70	0.08
6	74	55		78	58		80	64		90	63	
7	83	60		81	61		85	70		84	63	
8	81	62		87	66		89	74		77	65	0.10
9	82	57	0.52	89	66		91	69	0.09	75	67	0.07
10	74	51		80	67	0.11	92	73	0.02	85	70	0.05
11	77	50		74	66	0.01	94	73	0.23	92	72	
12	78	49		79	65		93	75		91	74	
13	71	45		83	68		95	74		92	75	
14	79	53	0.01	88	70		96	74		93	72	0.07
15	83	53		89	69		96	70	0.09	93	73	0.10
16	78	53		88	69		91	71		93	75	
17	84	53		83	67	3.15	95	75		94	75	
18	88	65		84	65	0.13	95	75		93	74	
19	89	69		86	66		95	75		83	72	0.86
20	87	63		91	72		95	75		92	74	0.23
21	75	63		90	73		95	75		92	70	
22	78	54		90	70		96	76		86	64	
23	77	54		94	70		97	78		79	61	
24	85	64		86	76		96	77		85	63	
25	79	68	0.31	86	75		98	78		86	63	
26	85	69	0.03	83	74		99	78		89	65	
27	85	64	0.81	83	75		100	79		90	67	
28	86	65	1.20	85	73		100	79		93	68	
29	77	59	0.03	91	70	1.92	99	74	0.17	95	72	
30	81	59		90	73	0.43	90	71	0.04	95	72	
31	83	63	0.39				87	68		96	75	

Conversion Table

U.S. to Metric			Metric to U.S.		
to convert from	to	multiply U.S. unit by	to convert from	to	multiply metric unit by
length			length		
miles	kilometers	1.61	kilometers	miles	.62
yards	meters	.91	meters	yards	1.09
feet	meters	.31	meters	feet	3.28
inches	centimeters	2.54	centimeters	inches	.39
area and volume			area and volume		
sq yards	sq meters	.84	sq meters	sq yards	1.20
sq feet	sq meters	.09	sq meters	sq feet	10.76
sq inches	sq centimeters	6.45	sq centimeters	sq inches	.16
cu inches	cu centimeters	16.39	cu centimeters	cu inches	.06
acres	hectares	.41	hectares	acres	2.47
liquid measure			liquid measure		
cu inches	liters	.02	liters	cu inches	61.02
cu feet	liters	28.34	liters	cu feet	.04
gallons	liters	3.79	liters	gallons	.26
quarts	liters	.95	liters	quarts	1.06
fluid ounces	milliliters	29.57	milliliters	fluid ounces	.03
weight and mass			weight and mass		
pounds	kilograms	.45	kilograms	pounds	2.21
ounces	grams	28.35	grams	ounces	.04
temperature			temperature		
F	C	5/9(F-32)	C	F	9/5(C+32)


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