

# North Carolina State University

**POST FALSE GREEN KYLLINGA CONTROL IN TIFWAY 419 BERMUDAGRASS USING FLAZASULFURON  
OTHER SULFONYLUREA HERBICIDES AS WELL AS INDUSTRY STANDARDS**

Trial ID: 03-T20  
Location: REEDY CREEK

Study Dir.: L.S. WARREN  
Investigator: Fred Yelverton

**GENERAL TRIAL INFORMATION**

**Study Director:** L.S. WARREN **Title:** RESEARCH ASSOCIATE  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695  
**Investigator:** Fred Yelverton **Title:** PROFESSOR  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695

**TRIAL LOCATION**

**City:** SMITHFIELD **Trial Status:** COMPLETED  
**State/Prov.:** NC  
**Postal Code:** 27577 **Initiation Date:** 5-7-03  
**Country:** USA

**COOPERATOR/LANDOWNER**

**Cooperator:** BRENT BASS **Country:** USA  
**Org:** REEDY CREEK GOLF COURSE **Phone No:** 919/934-0483  
**Address 1:** 723 SOUTH 2ND STREET  
**City:** SMITHFIELD  
**State/Prov:** NC  
**Postal Code:** 27577

**Conducted Under GLP (Y/N):** N **Conducted Under GEP (Y/N):** N

**Objective:** TO EVALUATE THE EFFICACY OF FLAZASULFURON AND OTHER SULFONYLUREA HERBICIDES AS WELL AS INDUSTRY STANDARDS FOR POST GREEN KYLLINGA CONTROL IN COMMON BERMUDAGRASS

**CROP AND WEED DESCRIPTION**

Weed	Code	Common Name	Scientific Name
1.	KYLGR	FALSE GREEN KYLLINGA	KYLLINGA GRACILLIMA L.

**Crop 1:** CYNDA BERMUDAGRASS **Variety:** TIFWAY 419

**SITE AND DESIGN**

**Plot Width, Unit:** 4 FT **Plot Length, Unit:** 10 FT **Reps:** 4  
**Site Type:** TURF - RESEARCH  
**Tillage Type:** NA **Study Design:** RANDOMIZED COMPLETE BLOCK

**SOIL DESCRIPTION**

**% OM:** 0.41  
**pH:** 5.8  
**CEC:** 3.1 **Fert. Level:** GOOD

**Overall Moisture Conditions:** TEST AREA WAS IRRIGATED AS NEEDED

**APPLICATION DESCRIPTION**

	A	B	C	D	E
<b>Application Date:</b>	5-7-03	5-14-03	5-27-03	6-20-03	7-22-03
<b>Time of Day:</b>	11:45 AM	4:00 PM	3:00 PM	8:00 AM	11:00 AM
<b>Application Method:</b>	SPRAY	SPRAY	SPRAY	SPRAY	SPRAY
<b>Application Timing:</b>	6 LEAF	7 DAY	20 DAY	44 DAY	76 DAY
<b>Applic. Placement:</b>	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
<b>Air Temp., Unit:</b>	77 F	79 F	72 F	72 F	86 F
<b>% Relative Humidity:</b>	74	40	76	95	73
<b>Wind Velocity, Unit:</b>	1.7 MPH	5.4 MPH	0.7 MPH	0.4 MPH	4.7 MPH
<b>Dew Presence (Y/N):</b>	N	N	Y	Y	N
<b>Soil Temp., Unit:</b>	70 F	78 F	73 F	78 F	84 F
<b>Soil Moisture:</b>	WET	WET	WET	WET	MOIST
<b>% Cloud Cover:</b>	85	5	100	100	80

**CROP STAGE AT EACH APPLICATION**

	A	B	C	D	E
<b>Crop 1 Code, Stage:</b>	CYNDA MOWED	CYNDA MOWED	CYNDA MOWED	CYNDA MOWED	CYNDA MOWED
<b>Stage Scale:</b>	NA	NA	NA	NA	NA
<b>Height, Unit:</b>	1.5 IN	1.0 IN	1.0 IN	1.5 IN	1.5 IN

**WEED STAGE AT EACH APPLICATION**

	A	B	C	D	E
<b>Weed 1 Code, Stage:</b>	KYLGR 6 LEAF	KYLGR 6 LEAF	KYLGR 6 LEAF	KYLGR 6+ LEAF	KYLGR 6+ LEAF
<b>Stage Scale:</b>	2 INCH	1 INCH	1 INCH	2 INCH	2 INCH
<b>Density, Unit:</b>	10+ FT2	10+ FT2	10+ FT2	10+ FT2	10+ FT2

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## APPLICATION EQUIPMENT

	A	B	C	D	E
<b>Appl. Equipment:</b>	BACSPR	BACSPR	BACSPR	BACSPR	BACSPR
<b>Operating Pressure:</b>	35 PSI	35 PSI	35 PSI	35 PSI	35 PSI
<b>Nozzle Type:</b>	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN	FLAT FAN
<b>Nozzle Size:</b>	XR 8002VS	XR 8002VS	XR 8002VS	XR 8002VS	XR 8002VS
<b>Nozzle Spacing, Unit:</b>	10 IN	10 IN	10 IN	10 IN	10 IN
<b>Band Width, Unit:</b>	40 IN	40 IN	40 IN	40 IN	40 IN
<b>Boom Length, Unit:</b>	40 IN	40 IN	40 IN	40 IN	40 IN
<b>Boom Height, Unit:</b>	10 IN	10 IN	10 IN	10 IN	10 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH	3 MPH	3 MPH	3 MPH
<b>Carrier:</b>	WATER	WATER	WATER	WATER	WATER
<b>Spray Volume, Unit:</b>	32.5 GPA	32.5 GPA	32.5 GPA	32.5 GPA	32.5 GPA
<b>Propellant:</b>	COMCO2	COMCO2	COMCO2	COMCO2	COMCO2
<b>Tank Mix (Y/N):</b>	Y	Y	Y	Y	Y

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Study Dir.: L.S. WARREN  
Investigator: Fred Yelverton

Weed Code											KYLGR	KYLGR	KYLGR
Rating Data Type											CONTROL	CONTROL	CONTROL
Rating Unit											PERCENT	PERCENT	PERCENT
Rating Date											5-27-03	6-20-03	7-7-03
Assessed By											L.S. WARREN	L.S. WARREN	L.S. WARREN
Trt-Eval Interval											20 DA-A	44 DA-A	61 DA-A
ARM Action Codes											P	P	P
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Product Rate	Product Rate Unit	Grow Stg	Appl Code	Spray Volume			
1	FLAZASULFURON X-77 SPREADER	25 L	DG	3.0 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		94.3 a	99.0 a	81.0 ab
2	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 L 25 L	DG	3.0 0.25 3.0 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		94.5 a	99.0 a	99.0 a
3	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 L 25 L	DG	2.25 0.25 2.25 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		84.8 ab	99.0 a	95.5 a
4	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 L 25 L	DG	1.5 0.25 1.5 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		73.5 abc	98.0 a	94.5 a
5	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 L 25 L 25 L	DG	1.5 0.25 1.5 0.25 1.5 0.25	oz wt/a % v/v oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27 JUN 20 JUN 20	A A C C D D		80.8 ab	96.8 a	99.0 a
6	SULFOSULFURON X-77 SPREADER	75 L	WG	1.5 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		43.3 de	79.7 a	97.7 a
7	SULFOSULFURON X-77 SPREADER SULFOSULFURON X-77 SPREADER	75 L 75 L	WG	1.33 0.25 1.33 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUL 22 JUL 22	A A E E		16.3 fg	56.0 b	88.3 a
8	TRIFLOXYSULFURON X-77 SPREADER	75 L	WG	0.47 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		65.0 bcd	84.5 a	95.8 a
9	TRIFLOXYSULFURON X-77 SPREADER TRIFLOXYSULFURON X-77 SPREADER	75 L 75 L	WG	0.47 0.25 0.47 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUN 20 JUN 20	A A D D		68.5 bc	96.8 a	99.0 a
10	MANAGE X-77 SPREADER	75 L	WG	1.33 0.5	oz wt/a % v/v			MAY 7 MAY 7	A A		36.3 ef	82.3 a	63.8 b
11	MANAGE X-77 SPREADER MANAGE X-77 SPREADER	75 L 75 L	WG	1.33 0.5 1.33 0.5	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUN 20 JUN 20	A A D D		50.0 cde	83.8 a	95.8 a
12	BUENO 6 BUENO 6	6.0 6.0	L	2.0 2.0	lb ai/a lb ai/a			MAY 7 MAY 14	A B		28.8 ef	91.8 a	98.0 a
13	IMAGE 70DG BUENO 6 X-77 SPREADER	70 6.0 L	DG	0.5 2.0 0.25	lb ai/a lb ai/a % v/v			MAY 7 MAY 7 MAY 7	A A A		62.3 bcd	86.8 a	66.3 b
14	CHECK										0.0 g	0.0 c	0.0 c
LSD (P=.05)											23.76	22.32	20.00
Standard Deviation											16.63	15.62	13.99
CV											29.17	18.96	16.7
Grand Mean											57.01	82.37	83.82
Bartlett's X2											18.866	23.9	40.92
P(Bartlett's X2)											0.092	0.004*	0.001*
Replicate F											9.172	0.804	0.957
Replicate Prob(F)											0.0001	0.4996	0.4227
Treatment F											12.239	11.464	14.744
Treatment Prob(F)											0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, LSD)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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Weed Code										KYLGR	KYLGR	KYLGR		
Rating Data Type										CONTROL	CONTROL	CONTROL		
Rating Unit										PERCENT	PERCENT	PERCENT		
Rating Date										7-22-03	8-6-03	8-21-03		
Assessed By										L.S. WARREN	L.S. WARREN	L.S. WARREN		
Trt-Eval Interval										76 DA-A	91 DA-A	106 DA-A		
ARM Action Codes										P	P	P		
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Product Rate	Product Rate	Unit	Grow Stg	Appl Code	Spray Volume			
1	FLAZASULFURON X-77 SPREADER	25 L	DG	3.0	oz wt/a				MAY 7	A		96.0 a	85.8 a	84.8 a
			L	0.25	% v/v				MAY 7	A				
2	FLAZASULFURON X-77 SPREADER	25 L	DG	3.0	oz wt/a				MAY 7	A		99.0 a	100.0 a	96.8 a
			L	0.25	% v/v				MAY 7	A				
	FLAZASULFURON X-77 SPREADER	25 L	DG	3.0	oz wt/a				MAY 27	C				
			L	0.25	% v/v				MAY 27	C				
3	FLAZASULFURON X-77 SPREADER	25 L	DG	2.25	oz wt/a				MAY 7	A		99.0 a	98.0 a	95.3 a
			L	0.25	% v/v				MAY 7	A				
	FLAZASULFURON X-77 SPREADER	25 L	DG	2.25	oz wt/a				MAY 27	C				
			L	0.25	% v/v				MAY 27	C				
4	FLAZASULFURON X-77 SPREADER	25 L	DG	1.5	oz wt/a				MAY 7	A		99.0 a	97.3 a	97.5 a
			L	0.25	% v/v				MAY 7	A				
	FLAZASULFURON X-77 SPREADER	25 L	DG	1.5	oz wt/a				MAY 27	C				
			L	0.25	% v/v				MAY 27	C				
5	FLAZASULFURON X-77 SPREADER	25 L	DG	1.5	oz wt/a				MAY 7	A		98.8 a	99.0 a	96.5 a
			L	0.25	% v/v				MAY 7	A				
	FLAZASULFURON X-77 SPREADER	25 L	DG	1.5	oz wt/a				MAY 27	C				
			L	0.25	% v/v				MAY 27	C				
	FLAZASULFURON X-77 SPREADER	25 L	DG	1.5	oz wt/a				JUN 20	D				
			L	0.25	% v/v				JUN 20	D				
6	SULFOSULFURON X-77 SPREADER	75 L	WG	1.5	oz wt/a				MAY 7	A		88.0 a	93.3 a	81.3 a
			L	0.25	% v/v				MAY 7	A				
7	SULFOSULFURON X-77 SPREADER	75 L	WG	1.33	oz wt/a				MAY 7	A		98.5 a	100.0 a	99.0 a
			L	0.25	% v/v				MAY 7	A				
	SULFOSULFURON X-77 SPREADER	75 L	WG	1.33	oz wt/a				JUL 22	E				
			L	0.25	% v/v				JUL 22	E				
8	TRIFLOXYSULFURON X-77 SPREADER	75 L	WG	0.47	oz wt/a				MAY 7	A		98.8 a	99.5 a	96.8 a
			L	0.25	% v/v				MAY 7	A				
9	TRIFLOXYSULFURON X-77 SPREADER	75 L	WG	0.47	oz wt/a				MAY 7	A		99.0 a	100.0 a	99.0 a
			L	0.25	% v/v				MAY 7	A				
	TRIFLOXYSULFURON X-77 SPREADER	75 L	WG	0.47	oz wt/a				JUN 20	D				
			L	0.25	% v/v				JUN 20	D				
10	MANAGE X-77 SPREADER	75 L	WG	1.33	oz wt/a				MAY 7	A		55.0 b	52.5 b	47.3 b
			L	0.5	% v/v				MAY 7	A				
11	MANAGE X-77 SPREADER	75 L	WG	1.33	oz wt/a				MAY 7	A		99.0 a	99.5 a	98.8 a
			L	0.5	% v/v				MAY 7	A				
	MANAGE X-77 SPREADER	75 L	WG	1.33	oz wt/a				JUN 20	D				
			L	0.5	% v/v				JUN 20	D				
12	BUENO 6	6.0 L	L	2.0	lb ai/a				MAY 7	A		84.5 a	95.0 a	97.0 a
		6.0 L	L	2.0	lb ai/a				MAY 14	B				
13	IMAGE 70DG	70 DG	DG	0.5	lb ai/a				MAY 7	A		93.5 a	89.3 a	95.8 a
		6.0 L	L	2.0	lb ai/a				MAY 7	A				
	BUENO 6 X-77 SPREADER	6.0 L	L	2.0	lb ai/a				MAY 7	A				
			L	0.25	% v/v				MAY 7	A				
14	CHECK											0.0 c	0.0 c	0.0 c
LSD (P=.05)											17.04	15.96	19.82	
Standard Deviation											11.92	11.17	13.87	
CV											13.82	12.93	16.38	
Grand Mean											86.29	86.36	84.68	
Bartlett's X2											68.11	66.547	69.958	
P(Bartlett's X2)											0.001*	0.001*	0.001*	
Replicate F											0.835	2.159	2.018	
Replicate Prob(F)											0.4829	0.1089	0.1277	
Treatment F											21.315	24.809	16.276	
Treatment Prob(F)											0.0001	0.0001	0.0001	

Means followed by same letter do not significantly differ (P=.05, LSD)  
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Trial ID: 03-T20  
Location: REEDY CREEK

Study Dir.: L.S. WARREN  
Investigator: Fred Yelverton

										KYLGR CONTROL PERCENT 9-4-03 L.S. WARREN 120 DA-A P	
Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Unit	Product Rate	Product Rate Unit	Grow Stg	Appl Code	Spray Volume	
1	FLAZASULFURON X-77 SPREADER	25	DG L	3.0 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		98.0 a
2	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 25	DG L DG L	3.0 0.25 3.0 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		99.0 a
3	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 25	DG L DG L	2.25 0.25 2.25 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		99.0 a
4	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 25	DG L DG L	1.5 0.25 1.5 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27	A A C C		99.0 a
5	FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER FLAZASULFURON X-77 SPREADER	25 25 25	DG L DG L DG L	1.5 0.25 1.5 0.25 1.5 0.25	oz wt/a % v/v oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 MAY 27 MAY 27 JUN 20 JUN 20	A A C C D D		99.0 a
6	SULFOSULFURON X-77 SPREADER	75	WG L	1.5 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		89.3 a
7	SULFOSULFURON X-77 SPREADER SULFOSULFURON X-77 SPREADER	75 75	WG L WG L	1.33 0.25 1.33 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUL 22 JUL 22	A A E E		99.0 a
8	TRIFLOXYSULFURON X-77 SPREADER	75	WG L	0.47 0.25	oz wt/a % v/v			MAY 7 MAY 7	A A		99.0 a
9	TRIFLOXYSULFURON X-77 SPREADER TRIFLOXYSULFURON X-77 SPREADER	75 75	WG L WG L	0.47 0.25 0.47 0.25	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUN 20 JUN 20	A A D D		99.0 a
10	MANAGE X-77 SPREADER	75	WG L	1.33 0.5	oz wt/a % v/v			MAY 7 MAY 7	A A		63.8 b
11	MANAGE X-77 SPREADER MANAGE X-77 SPREADER	75 75	WG L WG L	1.33 0.5 1.33 0.5	oz wt/a % v/v oz wt/a % v/v			MAY 7 MAY 7 JUN 20 JUN 20	A A D D		99.0 a
12	BUENO 6 BUENO 6	6.0 6.0	L L	2.0 2.0	lb ai/a lb ai/a			MAY 7 MAY 14	A B		99.0 a
13	IMAGE 70DG BUENO 6 X-77 SPREADER	70 6.0	DG L L	0.5 2.0 0.25	lb ai/a lb ai/a % v/v			MAY 7 MAY 7 MAY 7	A A A		99.0 a
14	CHECK										0.0 c
LSD (P=.05)											17.85
Standard Deviation											12.49
CV											14.09
Grand Mean											88.65
Bartlett's X2											14.918
P(Bartlett's X2)											0.001*
Replicate F											0.887
Replicate Prob(F)											0.4568
Treatment F											19.014
Treatment Prob(F)											0.0001

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## Trial Comments

05-27-03: CYNDA WAS MOWED, SCALPED AND DISCOLORED IN SOME AREAS AND WAS IN SATURATED SOIL DUE TO RECENT RAINS  
KYLGR WAS IN SAME CONDITION AS CYNDA, THUS MAKING PERCENT CONTROL HARD TO ACCURATELY DETERMINE AT THIS TIME

06-20-03: SOIL WAS COMPLETELY SATURATED  
KYLGR WAS BROWNISH-GREEN IN NONTREATED PLOTS AS COMPARED TO A BRIGHT LIGHT GREEN APPEARANCE IN HIGHER  
ELEVATION AREAS WHERE SOIL WAS NOT SATURATED

08-21-03: TEST AREA MOWED WITH THICK CLIPPINGS THAT HELPED INFLUENCE RATINGS

09-04-03: ALL ANNUAL SEDGE AND KYLGR SPECIES WERE IN FLOWERING STAGE THROUGHOUT THE TEST AREA - RATINGS TODAY  
WERE TRUE REFLECTION OF KYLGR CONTROL ONLY - ALL RATINGS UP UNTIL TODAY WERE INFLUENCED BY ANNUAL SEDGE  
PRESENCE