

# North Carolina State University

## SULFONYLUREA HERBICIDES FOR POSTEMERGENT FALSE GREEN KYLLINGA CONTROL IN A BERMUDAGRASS FAIRWAY

Trial ID: 04-D11  
Location: WALNUT WOOD GC

Study Director: TRAVIS GANNON  
Investigator: Fred Yelverton

### General Trial Information

**Study Director:** TRAVIS GANNON **Title:** RESEARCH ASSOCIATE  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695 **E-mail:** TRAVIS\_GANNON@NCSSU.EDU  
**Investigator:** FRED YELVERTON **Title:** PROFESSOR  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695 **E-mail:** FRED\_YELVERTON@NCSSU.EDU

**Trial Location**

**City:** JULIAN **Trial Status:** COMPLETED  
**State/Prov.:** NC  
**Postal Code:** 27283 **Initiation Date:** 6-1-04  
**Country:** USA  
**Directions:**

**Objectives:**

**Conclusions:**

### Cooperator/Landowner

**Cooperator:** MITCH CLENDENIN **Country:** USA  
**Organization:** WALNUT WOODS GOLF COURSE **Phone No:** 336.697.8140  
**Address 1:** 3172 ALAMANCE CH RD  
**City:** JULIAN  
**State/Prov:** NC  
**Postal Code:** 27283

### Crop Description

**Crop 1:** CYNDA Cynodon dactylon Bermuda grass  
**BBCH Scale:** BGRM

### Pest Description

**Pest 1 Type:** W **Code:** KYLGR Kyllinga gracillima  
**Common Name:** False green kyllinga

### Site and Design

**Plot Width, Unit:** 4 FT **Site Type:** Golf Course Fairway  
**Plot Length, Unit:** 7 FT  
**Replications:** 4 **Study Design:** Randomized Complete Block

**Trial Initiation Comments:**

**Field Prep./Maintenance:**

### Soil Description

**% OM:** 0.56 **Texture:** Mineral  
**pH:** 5.9  
**CEC:** 6.8 **Fert. Level:** GOOD

### Moisture Conditions

**Overall Moisture Conditions:** IRRIGATED AS NEEDED

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### Application Description

	A	B	C
Application Date:	6-1-04	6-9-04	7-13-04
Time of Day:	5-6 PM	1-2 PM	1-2 PM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	JUNE 1	JUNE 9	JULY 13
Application Placement:	FOLIAR	FOLIAR	FOLIAR
Applied By:	T GANNON	T GANNON	T GANNON
Air Temperature, Unit:	83.4 F	87.8 F	91.8 F
% Relative Humidity:	34	78	73
Wind Velocity, Unit:	1.2 MPH	1.1 MPH	0.9 MPH
Dew Presence (Y/N):	N	N	N
Soil Temperature, Unit:	81 F	81 F	87 F
Soil Moisture:	FAIR	GOOD	GOOD
% Cloud Cover:	20	30	35

### Crop Stage At Each Application

	A	B	C
Crop 1 Code, BBCH Scale:	CYNDA BGRM	CYNDA BGRM	CYNDA BGRM
Stage Scale Used:	MOWED	MOWED	MOWED
Height, Unit:	0.5 IN	0.5 IN	0.5 IN
Height Minimum, Maximum:	0.5 0.5	0.5 0.5	0.5 0.5

### Pest Stage At Each Application

	A	B	C
Pest 1 Code, Disc., Scale:	KYLGR W	KYLGR W	KYLGR W
Height, Unit:	0.5 IN	0.5 IN	0.5 IN
Height Minimum, Maximum:	0.5 0.5	0.5 0.5	0.5 0.5
Density, Unit:	8 FT2	8 FT2	12 FT2
Coverage, Unit:	65 %	65 %	75 %

### Application Equipment

	A	B	C
Appl. Equipment:	CO2 SPRAY	CO2 SPRAY	CO2 SPRAY
Operating Pressure:	25	25	25
Pressure Unit:	PSI	PSI	PSI
Nozzle Type:	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size:	VS8002XR	VS8002XR	VS8002XR
Nozzle Spacing, Unit:	10 INCH	10 INCH	10 INCH
Nozzles/Row:	4	4	4
Boom Length, Unit:	40 INCH	40 INCH	40 INCH
Boom Height, Unit:	10 INCH	10 INCH	10 INCH
Ground Speed, Unit:	3 MPH	3 MPH	3 MPH
Carrier:	WATER	WATER	WATER
Spray Volume:	32.5	32.5	32.5
Volume Unit:	GPA	GPA	GPA
Propellant:	COMP CO2	COMP CO2	COMP CO2

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					KYLBR	KYLBR	KYLBR	KYLBR	KYLBR	KYLBR				
					6-9-04	6-15-04	6-22-04	6-28-04	7-13-04	7-21-04				
					CONTROL	CONTROL	CONTROL	CONTROL	CONTROL	CONTROL				
					%	%	%	%	%	%				
					0	6	13	19	0	8				
					8 DA-A	14 DA-A	21 DA-A	27 DA-A	42 DA-A	50 DA-A				
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code						
1	DPX-F5384 X-77	60 DF	L	1.67 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	25.0 cd	37.5 c	0.0 c	0.0 c	0.0 c
2	DPX-F6025 X-77	25 WDG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	26.3 cd	97.3 a	100.0 a	100.0 a	95.0 ab
3	DPX-KU253 X-77	42 WDG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	43.8 bcd	93.5 a	97.5 a	100.0 a	97.5 ab
4	DPX-T6376 DPX-F6025 X-77	60 DF 25 WDG	L	0.104 oz/a 0.64 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	0.0 a	52.5 bc	93.5 a	100.0 a	90.0 b	91.3 b
5	DPX-F5384 DPX-T6376 X-77	60 DF 60 DF	L	1.33 oz/a 0.104 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	0.0 a	3.3 d	79.3 b	61.7 b	0.0 c	0.0 c
6	MONUMENT X-77	75 WG	L	0.56 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	66.3 abc	98.0 a	97.5 a	100.0 a	98.8 ab
7	MONUMENT X-77 MONUMENT X-77	75 WG 75 WG	L	0.33 oz/a 0.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C	A	0.0 a	48.3 bc	97.0 a	100.0 a	100.0 a	100.0 a
8	MANAGE X-77	75 WG	L	1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	71.3 ab	98.0 a	97.5 a	100.0 a	98.3 ab
9	MANAGE X-77 MANAGE X-77	75 WG 75 WG	L	1.33 oz/a 0.25 % v/v 1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C JULY 13 C	A	0.0 a	50.0 bc	94.3 a	100.0 a	90.0 b	100.0 a
10	MSMA 6.6 X-77 MSMA 6.6 X-77	6.6 L 6.6 L	L	2 lb ai/a 0.25 % v/v 2 lb ai/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 9 B JUNE 9 B	A	0.0 a	55.0 abc	96.0 a	95.0 a	100.0 a	96.3 ab
11	FLAZASULFURON X-77	25 WG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	81.3 ab	98.0 a	100.0 a	100.0 a	99.3 a
12	FLAZASULFURON X-77	25 WG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	99.0 a	98.0 a	100.0 a	100.0 a	100.0 a
13	FLAZASULFURON X-77	25 WG	L	1.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	99.0 a	98.0 a	100.0 a	98.3 a	96.7 ab
14	FLAZASULFURON X-77	25 WG	L	3 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 a	97.7 a	98.0 a	100.0 a	100.0 a	100.0 a
15	NONTREATED								0.0 a	0.0 d	0.0 d	0.0 c	0.0 c	0.0 c
LSD (P=.05)					0.00	44.16	13.22	7.87	6.54	7.63				
Standard Deviation					0.00	30.58	9.16	5.45	4.53	5.29				
CV					0.0	56.04	10.76	6.55	5.76	6.76				
Grand Mean					0.0	54.58	85.09	83.28	78.56	78.2				
Bartlett's X2					0.0	15.535	28.048	9.722	3.997	18.134				
P(Bartlett's X2)					.	0.159	0.001*	0.045*	0.136	0.011*				
Friedman's X2					0.0	40.106	28.244	29.513	32.906	31.3				
P(Friedman's X2)					1.00	0.001	0.013	0.009	0.003	0.005				
Replicate F					0.000	1.776	1.559	1.141	0.794	0.468				
Replicate Prob(F)					1.0000	0.1697	0.2166	0.3460	0.5053	0.7067				
Treatment F					0.000	4.397	38.073	166.533	324.672	235.242				
Treatment Prob(F)					1.0000	0.0002	0.0001	0.0001	0.0001	0.0001				

Means followed by same letter do not significantly differ (P=.05, LSD)  
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Pest Code				KYLBR	KYLBR	KYLBR	TURF	TURF	TURF					
Crop Code				7-28-04	8-9-04	9-13-04	6-9-04	6-15-04	6-22-04					
Rating Date				CONTROL	CONTROL	CONTROL	QUALITY	QUALITY	QUALITY					
Rating Data Type				%	%	%	1-9	1-9	1-9					
Rating Unit				15	27	62	0	6	13					
Days After Last Applic.				57 DA-A	69 DA-A	104 DA-A	8 DA-A	14 DA-A	21 DA-A					
Trt-Eval Interval														
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Stage	Appl Code						
1	DPX-F5384 X-77	60 DF	L	1.67 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	0.0 c	0.0 c	0.0 d	7.0 a	7.0 a	7.0 a
2	DPX-F6025 X-77	25 WDG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	95.0 a	96.3 a	92.5 ab	7.0 a	7.0 a	7.0 a
3	DPX-KU253 X-77	42 WDG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	98.8 a	97.5 a	93.8 ab	7.0 a	7.0 a	7.0 a
4	DPX-T6376 DPX-F6025 X-77	60 DF 25 WDG	L	0.104 oz/a 0.64 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	78.8 b	77.5 b	72.5 c	7.0 a	7.0 a	7.0 a
5	DPX-F5384 DPX-T6376 X-77	60 DF 60 DF	L	1.33 oz/a 0.104 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	0.0 c	0.0 c	0.0 d	7.0 a	7.0 a	7.0 a
6	MONUMENT X-77	75 WG	L	0.56 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
7	MONUMENT X-77 MONUMENT X-77	75 WG 75 WG	L	0.33 oz/a 0.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C JULY 13 C	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
8	MANAGE X-77	75 WG	L	1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	96.3 a	96.3 a	92.5 ab	7.0 a	7.0 a	7.0 a
9	MANAGE X-77 MANAGE X-77	75 WG 75 WG	L	1.33 oz/a 0.25 % v/v 1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C JULY 13 C	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
10	MSMA 6.6 X-77 MSMA 6.6 X-77	6.6 L 6.6 L	L	2 lb ai/a 0.25 % v/v 2 lb ai/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 9 B JUNE 9 B	A	98.8 a	98.8 a	82.5 bc	7.0 a	7.0 a	7.0 a
11	FLAZASULFURON X-77	25 WG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
12	FLAZASULFURON X-77	25 WG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
13	FLAZASULFURON X-77	25 WG	L	1.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
14	FLAZASULFURON X-77	25 WG	L	3 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	100.0 a	100.0 a	100.0 a	7.0 a	7.0 a	7.0 a
15	NONTREATED								0.0 c	0.0 c	0.0 d	7.0 a	7.0 a	7.0 a
LSD (P=.05)					14.03	16.24	15.39		0.00	0.00	0.00			
Standard Deviation					9.72	11.24	10.66		0.00	0.00	0.00			
CV					12.49	14.46	14.1		0.0	0.0	0.0			
Grand Mean					77.83	77.75	75.58		7.0	7.0	7.0			
Bartlett's X2					28.539	27.021	25.452		0.0	0.0	0.0			
P(Bartlett's X2)					0.001*	0.001*	0.001*		.	.	.			
Friedman's X2					32.013	30.388	45.556		0.0	0.0	0.0			
P(Friedman's X2)					0.004	0.007	0.001		1.00	1.00	1.00			
Replicate F					0.947	1.005	1.441		0.000	0.000	0.000			
Replicate Prob(F)					0.4286	0.4020	0.2475		1.0000	1.0000	1.0000			
Treatment F					69.929	52.240	55.994		0.000	0.000	0.000			
Treatment Prob(F)					0.0001	0.0001	0.0001		1.0000	1.0000	1.0000			

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Pest Code				TURF	TURF	TURF	TURF	TURF	TURF					
Crop Code				6-28-04	7-13-04	7-21-04	7-28-04	8-9-04	9-13-04					
Rating Date				QUALITY	QUALITY	QUALITY	QUALITY	QUALITY	QUALITY					
Rating Data Type				1-9	1-9	1-9	1-9	1-9	1-9					
Rating Unit				19	0	8	15	27	62					
Days After Last Applic.				27 DA-A	42 DA-A	50 DA-A	57 DA-A	69 DA-A	104 DA-A					
Trt-Eval Interval														
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Stage	Appl Code						
1	DPX-F5384 X-77	60 DF	L	1.67 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
2	DPX-F6025 X-77	25 WDG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
3	DPX-KU253 X-77	42 WDG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
4	DPX-T6376 DPX-F6025 X-77	60 DF 25 WDG	L	0.104 oz/a 0.64 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
5	DPX-F5384 DPX-T6376 X-77	60 DF 60 DF	L	1.33 oz/a 0.104 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
6	MONUMENT X-77	75 WG	L	0.56 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
7	MONUMENT X-77 MONUMENT X-77	75 WG 75 WG	L	0.33 oz/a 0.25 % v/v 0.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C JULY 13 C	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
8	MANAGE X-77	75 WG	L	1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
9	MANAGE X-77 MANAGE X-77	75 WG 75 WG	L	1.33 oz/a 0.25 % v/v 1.33 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A JULY 13 C JULY 13 C	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
10	MSMA 6.6 X-77 MSMA 6.6 X-77	6.6 L 6.6 L	L	2 lb ai/a 0.25 % v/v 2 lb ai/a 0.25 % v/v			JUNE 1 A JUNE 1 A JUNE 9 B JUNE 9 B	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
11	FLAZASULFURON X-77	25 WG	L	0.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
12	FLAZASULFURON X-77	25 WG	L	1 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
13	FLAZASULFURON X-77	25 WG	L	1.5 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
14	FLAZASULFURON X-77	25 WG	L	3 oz/a 0.25 % v/v			JUNE 1 A JUNE 1 A	A	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
15	NONTREATED								7.0 a	7.0 a	7.0 a	7.0 a	7.0 a	7.0 a
LSD (P=.05)				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Standard Deviation				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CV				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grand Mean				7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Bartlett's X2				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P(Bartlett's X2)				.	.	.	.	.	.	.	.	.	.	.
Friedman's X2				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P(Friedman's X2)				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Replicate F				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Replicate Prob(F)				1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Treatment F				0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Treatment Prob(F)				1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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