

# North Carolina State University

## TOLERANCE OF SEEDLING 'PRINCESS' BERMUDAGRASS TO VARIOUS POSTEMERGENCE HERBICIDES

Trial ID: 04-D35  
Location: SANDHILLS STATION

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:** JACKSON SPRINGS **Trial Status:** COMPLETED  
**State/Prov.:** NC  
**Postal Code:** 27281 **Initiation Date:** 6-16-04  
**Country:** USA  
**Directions:**

Objectives:

Conclusions:

### Cooperator/Landowner

**Cooperator:** MARK THOMPSON **Country:** USA  
**Organization:** SANDHILLS RESEARCH STATION **Phone No:** 910.974.4673  
**Address 1:** 2148 WINDBLOW RD  
**City:** JACKSON SPRINGS  
**State/Prov:** NC  
**Postal Code:** 27281

### Crop Description

**Crop 1:** CYNDA Cynodon dactylon Bermuda grass  
**Variety:** PRINCESS  
**BBCH Scale:** BGRM **Planting Date:** 6-16-04  
**Planting Method:** DROP SPREAD **Rate, Unit:** 1 LB/1000FT2

### Site and Design

**Plot Width, Unit:** 4 FT **Site Type:** GOLF COURSE FAIRWAY  
**Plot Length, Unit:** 10 FT  
**Replications:** 4 **Study Design:** Randomized Complete Block

Trial Initiation Comments:

Field Prep./Maintenance:

### Soil Description

**% OM:** 0.56 **Texture:** MINERAL  
**pH:** 5.0  
**CEC:** 5.5 **Fert. Level:** GOOD

### Moisture Conditions

**Overall Moisture Conditions:** IRRIGATED AS NEEDED

### Application Description

	A	B
<b>Application Date:</b>	7-20-04	7-28-04
<b>Time of Day:</b>	10-12NOON	9-10 AM
<b>Application Method:</b>	SPRAY	SPRAY
<b>Application Timing:</b>	JULY 20	JULY 28
<b>Application Placement:</b>	FOLIAR	FOLIAR
<b>Applied By:</b>	T GANNON	T GANNON
<b>Air Temperature, Unit:</b>	82.1 F	78.1 F
<b>% Relative Humidity:</b>	87	98
<b>Wind Velocity, Unit:</b>	1.1 MPH	1.2 MPH
<b>Dew Presence (Y/N):</b>	N	Y
<b>Soil Temperature, Unit:</b>	79 F	79 F
<b>Soil Moisture:</b>	GOOD	GOOD
<b>% Cloud Cover:</b>	5	40

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### Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	CYNDA BGRM	CYNDA BGRM
Stage Scale Used:	240/FT2	240/FT2
Stage Majority, Percent:	1 TILLER 50	1 TILLER 50
Stage Minimum, Percent:	2 LEAF 10	2 LEAF 10
Stage Maximum, Percent:	3 TILLER 10	3 TILLER 10
Height, Unit:	0.75 IN	0.75 IN
Height Minimum, Maximum:	0.5 1	0.5 1

### Application Equipment

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

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					CYNDA	CYNDA	CYNDA	CYNDA
					BGRM	BGRM	BGRM	BGRM
					Bermuda grass	Bermuda grass	Bermuda grass	Bermuda grass
					7-28-04	8-3-04	8-11-04	8-16-04
					PHYTO	PHYTO	PHYTO	PHYTO
					%	%	%	%
					0	6	14	19
					8 DA-A	14 DA-A	22 DA-A	27 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Growth Unit	Appl Code
1	AATREX	4.0 L		1.0 lb ai/a			JULY 20 A	51.3 a
2	BUENO 6	6.0 L		1.0 lb ai/a			JULY 20 A	0.0 b
	BUENO 6	6.0 L		1.0 lb ai/a			JULY 28 B	3.8 cd
3	BUENO 6	6.0 L		1.5 lb ai/a			JULY 20 A	0.0 b
	BUENO 6	6.0 L		1.5 lb ai/a			JULY 28 B	5.0 bc
4	BUENO 6	6.0 L		2.0 lb ai/a			JULY 20 A	0.0 b
	BUENO 6	6.0 L		2.0 lb ai/a			JULY 28 B	7.5 b
5	CONFRONT	3.0 SL		1.0 pt/a			JULY 20 A	0.0 b
6	CONFRONT	3.0 SL		2.0 pt/a			JULY 20 A	0.0 e
7	DRIVE	75 DF		0.75 lb ai/a			JULY 20 A	0.0 b
	DYNEAMIC	L		1.5 pt/a			JULY 20 A	0.0 e
8	MILLENNIUM ULTRA	3.75 L		1.25 pt/a			JULY 20 A	0.0 b
9	MILLENNIUM ULTRA	3.75 L		2.5 pt/a			JULY 20 A	0.0 e
10	MONUMENT	75 WG		0.47 oz wt/a			JULY 20 A	0.0 b
	X-77 SPREADER	L		0.25 % v/v			JULY 20 A	0.0 e
11	REVOLVER	0.19 L		17.42 fl oz/a			JULY 20 A	0.0 b
12	TRIMEC CLASSIC	2.72 L		1.75 pt/a			JULY 20 A	1.3 de
13	TRIMEC CLASSIC	2.72 L		3.5 pt/a			JULY 20 A	3.8 c
14	NONTREATED							0.0 c
LSD (P=.05)					1.83	3.46	5.24	4.48
Standard Deviation					1.28	2.42	3.67	3.14
CV					34.95	28.84	39.12	34.77
Grand Mean					3.66	8.39	9.38	9.02
Bartlett's X2					0.0	2.429	6.152	3.654
P(Bartlett's X2)					.	0.488	0.406	0.723
Friedman's X2					10.4	20.864	20.286	20.05
P(Friedman's X2)					0.661	0.076	0.088	0.094
Replicate F					1.000	1.930	1.715	1.619
Replicate Prob(F)					0.4031	0.1407	0.1798	0.2005
Treatment F					458.455	478.313	205.371	281.549
Treatment Prob(F)					0.0001	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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					CYNDA	CYNDA	CYNDA	CYNDA
					BGRM	BGRM	BGRM	BGRM
					Bermuda grass	Bermuda grass	Bermuda grass	Bermuda grass
					8-23-04	9-13-04	7-28-04	8-3-04
					PHYTO	PHYTO	COVER	COVER
					%	%	%	%
					26	47	0	6
					34 DA-A	55 DA-A	8 DA-A	14 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate	Growth Unit	Appl Code
1	AATREX	4.0 L		1.0 lb ai/a			JULY 20 A	
2	BUENO 6	6.0 L		1.0 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		1.0 lb ai/a			JULY 28 B	
3	BUENO 6	6.0 L		1.5 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		1.5 lb ai/a			JULY 28 B	
4	BUENO 6	6.0 L		2.0 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		2.0 lb ai/a			JULY 28 B	
5	CONFRONT	3.0 SL		1.0 pt/a			JULY 20 A	
6	CONFRONT	3.0 SL		2.0 pt/a			JULY 20 A	
7	DRIVE	75 DF		0.75 lb ai/a			JULY 20 A	
	DYNEAMIC	L		1.5 pt/a			JULY 20 A	
8	MILLENNIUM ULTRA	3.75 L		1.25 pt/a			JULY 20 A	
9	MILLENNIUM ULTRA	3.75 L		2.5 pt/a			JULY 20 A	
10	MONUMENT	75 WG		0.47 oz wt/a			JULY 20 A	
	X-77 SPREADER	L		0.25 % v/v			JULY 20 A	
11	REVOLVER	0.19 L		17.42 fl oz/a			JULY 20 A	
12	TRIMEC CLASSIC	2.72 L		1.75 pt/a			JULY 20 A	
13	TRIMEC CLASSIC	2.72 L		3.5 pt/a			JULY 20 A	
14	NONTREATED							
LSD (P=.05)					0.00	0.00	8.13	7.58
Standard Deviation					0.00	0.00	5.69	5.31
CV					0.0	0.0	47.01	44.08
Grand Mean					0.0	0.0	12.11	12.04
Bartlett's X2					0.0	0.0	5.434	13.581
P(Bartlett's X2)					.	.	0.964	0.404
Friedman's X2					0.0	0.0	20.907	24.879
P(Friedman's X2)					1.00	1.00	0.075	0.024
Replicate F					0.000	0.000	1.501	0.964
Replicate Prob(F)					1.0000	1.0000	0.2293	0.4196
Treatment F					0.000	0.000	2.488	3.599
Treatment Prob(F)					1.0000	1.0000	0.0140	0.0009

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					CYNDA	CYNDA	CYNDA	CYNDA
					BGRM	BGRM	BGRM	BGRM
					Bermuda grass	Bermuda grass	Bermuda grass	Bermuda grass
					8-11-04	8-16-04	8-23-04	8-30-04
					COVER	COVER	COVER	COVER
					%	%	%	%
					14	19	26	33
Trt-Eval Interval					22 DA-A	27 DA-A	34 DA-A	41 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate	Growth Unit	Appl Code
1	AATREX	4.0 L		1.0 lb ai/a			JULY 20 A	
								1.5 d
2	BUENO 6	6.0 L		1.0 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		1.0 lb ai/a			JULY 28 B	
								7.5 bc
3	BUENO 6	6.0 L		1.5 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		1.5 lb ai/a			JULY 28 B	
								11.3 bc
4	BUENO 6	6.0 L		2.0 lb ai/a			JULY 20 A	
	BUENO 6	6.0 L		2.0 lb ai/a			JULY 28 B	
								12.5 b
5	CONFRONT	3.0 SL		1.0 pt/a			JULY 20 A	
								12.5 b
6	CONFRONT	3.0 SL		2.0 pt/a			JULY 20 A	
								10.0 bc
7	DRIVE	75 DF		0.75 lb ai/a			JULY 20 A	
	DYNEAMIC	L		1.5 pt/a			JULY 20 A	
								21.3 a
8	MILLENNIUM ULTRA	3.75 L		1.25 pt/a			JULY 20 A	
								10.0 bc
9	MILLENNIUM ULTRA	3.75 L		2.5 pt/a			JULY 20 A	
								11.3 bc
10	MONUMENT	75 WG		0.47 oz wt/a			JULY 20 A	
	X-77 SPREADER	L		0.25 % v/v			JULY 20 A	
								7.5 bc
11	REVOLVER	0.19 L		17.42 fl oz/a			JULY 20 A	
								11.3 bc
12	TRIMEC CLASSIC	2.72 L		1.75 pt/a			JULY 20 A	
								10.0 bc
13	TRIMEC CLASSIC	2.72 L		3.5 pt/a			JULY 20 A	
								6.3 cd
14	NONTREATED							
								11.3 bc
LSD (P=.05)					5.32	6.56	7.41	6.65
Standard Deviation					3.73	4.59	5.18	4.66
CV					36.22	35.48	33.76	26.96
Grand Mean					10.29	12.95	15.36	17.27
Bartlett's X2					11.058	5.072	9.52	12.839
P(Bartlett's X2)					0.606	0.956	0.658	0.46
Friedman's X2					27.014	25.771	25.971	25.293
P(Friedman's X2)					0.012	0.018	0.017	0.021
Replicate F					0.580	1.319	0.177	0.985
Replicate Prob(F)					0.6318	0.2820	0.9112	0.4097
Treatment F					5.386	4.859	5.668	6.644
Treatment Prob(F)					0.0001	0.0001	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	
	Crop Code									CYNDA
	BBCH Scale									BGRM
	Crop Name									Bermuda grass
	Rating Date									9-13-04
	Rating Data Type									COVER
	Rating Unit									%
	Days After Last Applic.									47
	Trt-Eval Interval									55 DA-A
1	AATREX	4.0	L	1.0	lb ai/a			JULY 20 A		1.3 d
2	BUENO 6	6.0	L	1.0	lb ai/a			JULY 20 A		13.8 c
	BUENO 6	6.0	L	1.0	lb ai/a			JULY 28 B		
3	BUENO 6	6.0	L	1.5	lb ai/a			JULY 20 A		23.8 bc
	BUENO 6	6.0	L	1.5	lb ai/a			JULY 28 B		
4	BUENO 6	6.0	L	2.0	lb ai/a			JULY 20 A		22.5 bc
	BUENO 6	6.0	L	2.0	lb ai/a			JULY 28 B		
5	CONFRONT	3.0	SL	1.0	pt/a			JULY 20 A		26.3 b
6	CONFRONT	3.0	SL	2.0	pt/a			JULY 20 A		20.0 bc
7	DRIVE	75	DF	0.75	lb ai/a			JULY 20 A		41.3 a
	DYNEAMIC		L	1.5	pt/a			JULY 20 A		
8	MILLENNIUM ULTRA	3.75	L	1.25	pt/a			JULY 20 A		20.0 bc
9	MILLENNIUM ULTRA	3.75	L	2.5	pt/a			JULY 20 A		18.8 bc
10	MONUMENT	75	WG	0.47	oz wt/a			JULY 20 A		15.0 c
	X-77 SPREADER		L	0.25	% v/v			JULY 20 A		
11	REVOLVER	0.19	L	17.42	fl oz/a			JULY 20 A		23.8 bc
12	TRIMEC CLASSIC	2.72	L	1.75	pt/a			JULY 20 A		17.5 bc
13	TRIMEC CLASSIC	2.72	L	3.5	pt/a			JULY 20 A		13.8 c
14	NONTREATED									21.3 bc
	LSD (P=.05)									10.46
	Standard Deviation									7.32
	CV									36.76
	Grand Mean									19.91
	Bartlett's X2									13.388
	P(Bartlett's X2)									0.418
	Friedman's X2									28.036
	P(Friedman's X2)									0.009
	Replicate F									1.431
	Replicate Prob(F)									0.2484
	Treatment F									5.681
	Treatment Prob(F)									0.0001

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Trial Comments