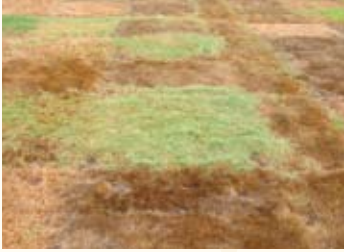




Drought Tolerance and Recovery

Study by Texas A&M University



Celebration after 60 day drought.

Celebration after 60 day recovery.

Drought Recovery Results

Recovery results of 25 turfgrass varieties after a 60 day recovery following a simulated drought.

Cultivar		11.22.06 % Recovery	Stat. Grouping	11.22.06 Uniformity
Celebration	BM	100.0	a	9.00 a
Grimes EXP	BM	100.0	a	9.00 a
Common Bermuda	BM	98.8	ab	9.00 a
GN1	BM	98.8	ab	9.00 a
Tifway 419	BM	98.8	ab	9.00 a
Tex Turf	BM	97.5	ab	9.00 a
TifSport	BM	97.5	ab	9.00 a
Buffalograss	BU	95.0	abc	9.00 a
Floratam	SA	88.8	abcd	8.50 a
EMPIRE	Z	71.3	abcde	8.50 a
Palisades	Z	71.3	abcde	8.50 a
Jamur	Z	68.8	abcdef	8.25 a
El Toro	Z	62.5	abcdefg	8.50 a
Premier	BM	57.5	bcdefg	7.25 ab
SA Common	SA	55.0	cdefghi	6.00 abc
Palmetto	SA	51.3	defghi	4.75 bc
Amerishade	SA	42.5	efghij	4.50 bc
Delmar	SA	37.5	efghij	4.75 bc
Cavalier	Z	27.5	fghij	6.75 ab
Raleigh	SA	25.0	ghij	4.50 bc
Emerald	Z	25.0	ghij	7.25 ab
Sapphire	SA	17.5	hij	3.00 c
Zeon	Z	17.5	hij	6.75 ab
Zorro	Z	15.0	ij	6.00 abc
Y-2	Z	4.3	j	3.00 c

End of recovery period percent living ground cover and uniformity of plot recovery. Data in columns followed by the same letter are not significantly different at the 0.05 level.

★ Celebration is rated #1 ★

- ★ For Drought Tolerance and Recovery
- ★ For Shade Tolerance
- ★ For Wear Tolerance
- ★ For Divot Recovery
- ...and
- ★ Requires Less Nitrogen
- ★ Reduces Player Injury Due to Lower Surface Hardness

Shade Tolerance

Study by Clemson University



Root Biomass comparison of Celebration (left) and Tifway bermudagrass following eight weeks of 64 percent continuous shade

Overall Shade Tolerance Rank

Overall shade tolerance rank of 42 bermudagrass cultivars after 8 weeks of full sun (control) and 64 percent continuous shade at the Clemson University greenhouse complex.

Cultivar	Rank†	Cultivar	Rank†
Celebration	6	Mohawk	1
TifGrand	5	SWI-1001	1
TiftNo. 1	5	Tifway	1
Transcontinental	5	Midlawn	1
SWI-1003	4	TifSport	1
Sunbird	4	OR 2002	1
Aussie Green	3	Ashmore	1
MS-Choice (Bullseye)	3	CIS-CD5	1
Princess 77	3	CIS-CD6	1
SWI-1045	3	CIS-CD7	1
SWI-1041	3	Panama	1
SWI-1012	3	La Paloma	1
B-14	2	Yukon	1
Riveria	2	OKC 70-18	1
SWI-1046	2	NuMex Sahara	1
TiftNo. 3	2	SWI-1014	0
Southern Star	2	GN-1	0
TiftNo. 2	2	Patriot	0
Sunstar	1	Sundevil	0
SWI-1044	1	SR 9554	0
FMC-6	1	Arizona Common	0

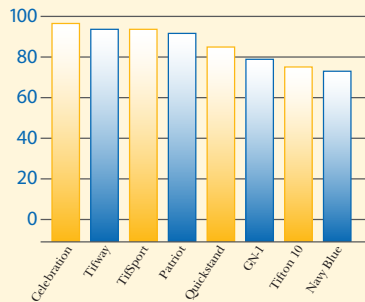
† Rank indicates number of times a cultivar placed in the top statistical category when grown under 64 percent continuous shade. Greatest shade tolerance = 6, greatest shade sensitivity = 0.

Wear Tolerance

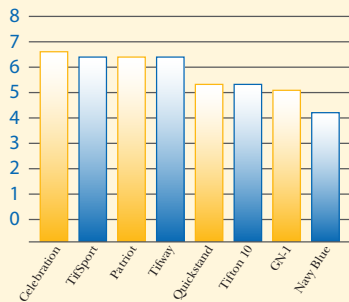
Study by North Carolina State University

Eight bermudagrass cultivars were evaluated for numerous performance characteristics, including wear tolerance.

2004 Digital Picture Analysis of Traffic Simulation



2004 Visual Analysis of Traffic Simulation



Digital analysis was performed using Sigma Scan software to detect the percentage of the plot that had green cover. Celebration had the greatest amount of green cover and thus resisted the wear treatment the best.

Turf quality rating reflect the performance of each turfgrass based on a visual scale of 1 to 9. Celebration was the top rated bermudagrass.

Divot Recovery

Study by The University of Arkansas

Celebration was the top rated vegetatively propagated Bermudagrass for divot recovery in a study by The University of Arkansas.

Nonlinear regression results for predicting bermudagrass variety recovery from injury. Varieties are sorted by average K value (fastest to slowest recovery). 48 cultivars were evaluated in this study: The below chart only includes the 22 varieties commercially available.

Variety	Propagation [†]	2003			2004		
		K [‡]	(SE)	R ²	K [‡]	(SE)	R ²
La Paloma	S	0.115	(0.0071)	0.96	0.201	(0.0125)	0.96
Yukon	S	0.122	(0.0078)	0.96	0.193	(0.0112)	0.97
SR 9554	S	0.130	(0.0011)	0.93	0.179	(0.0143)	0.93
Celebration	V	0.121	(0.0066)	0.97	0.177	(0.0107)	0.96
Arizona Common	S	0.119	(0.0117)	0.91	0.178	(0.0101)	0.96
Panama	S	0.122	(0.0100)	0.93	0.173	(0.0078)	0.98
NuMex Sahara	S	0.141	(0.0047)	0.99	0.152	(0.0114)	0.93
Princess 77	S	0.129	(0.0064)	0.98	0.160	(0.0155)	0.89
Sunstar	S	0.117	(0.0134)	0.88	0.170	(0.0124)	0.94
Transcontinental	S	0.114	(0.0075)	0.96	0.169	(0.0082)	0.97
Riviera	S	0.132	(0.0067)	0.96	0.151	(0.0108)	0.94
Mohawk	S	0.120	(0.0090)	0.94	0.159	(0.0091)	0.96
Sundevil	S	0.117	(0.0045)	0.99	0.148	(0.0087)	0.96
Southern Star	S	0.097	(0.0052)	0.97	0.162	(0.0074)	0.97
Aussie Green	V	0.108	(0.0049)	0.98	0.143	(0.0114)	0.91
GN-1	V	0.092	(0.0038)	0.98	0.158	(0.0101)	0.95
Patriot	V	0.125	(0.0073)	0.97	0.121	(0.0087)	0.93
Midlawn	V	0.114	(0.0059)	0.98	0.130	(0.0075)	0.95
MS-Choice (Bullseye)	V	0.111	(0.0083)	0.95	0.131	(0.0098)	0.93
Tifway	V	0.096	(0.0062)	0.96	0.139	(0.0072)	0.96
Ashmore	V	0.093	(0.0070)	0.95	0.119	(0.0068)	0.95
TifSport	V	0.074	(0.0072)	0.91	0.128	(0.0096)	0.92

[†] S = seeded, V = vegetative

[‡] K values determine recovery percentage according to the formula:

$1 - \exp(-K * \text{DAI})$, where DAI = days after injury. Higher K values indicate faster recovery from injury.

Fertilization Study

Study by Agricumbria Resources Co. Ltd.



Celebration requires less Nitrogen than Tifway 419

Research results show that quality Celebration sod can be produced with 40 units of Nitrogen per acre while Tifway 419 production requires at least 80 units of Nitrogen.

Professionals Talk About Celebration

These studies confirm what many golf course, sports turf and turfgrass professionals have been experiencing for the past several years—that Celebration has several practical advantages over other bermudagrass cultivars.



“The two things that impress me the most about Celebration are its drought tolerance and low fertility requirements. Side by side plots with 419 in the field strongly suggest that you can produce superior turf with Celebration using significantly less water and fertilizer inputs.”

~ Chip Powell, President
Powell Golf Design Co., Bradenton, FL



“Before switching to Celebration, I practically had to replace my football field between the hash marks every year; now, I don’t have to. Celebration saves me time and money and looks great. I am converting all my athletic fields to Celebration.”

~ Cecil “Fig” Newton
Director of Public Services, Athletic Field Supervisor
Jacksonville Independent School District
Jacksonville, TX



“Celebration Bermudagrass has performed in all respects as described by Sod Solutions. This Turfgrass has had more rapid horizontal growth, and has withstood play better than other bermudagrasses. We are very happy so far with the end results.”

~ Jody Peele
Director of Public Services Town of Mt. Pleasant
Mt. Pleasant, SC



“Celebration Bermuda’s shade tolerance, quick recovery from damage and overall growth appearance makes it GreenScape Associates’ grass of choice for commercial and residential applications.”

~ Vincent M. Morales
Vice President/General Manager
Greenscape Associates, LLC
Houston, TX